STRATEGIC FORCE MODERNIZATION PROGRAMS

HEARINGS

BEFORE THE

SUBCOMMITTEE ON
STRATEGIC AND THEATER NUCLEAR FORCES

OF THE

COMMITTEE ON ARMED SERVICES
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STRATEGIC FORCE MODERNIZATION PROGRAMS

MONDAY, OCTOBER 26, 1981

U.S. Senate,
Subcommittee on Strategic and
Theater Nuclear Forces,
Committee on Armed Services,
Washington, D.C.

SOVIET STRATEGIC CAPABILITIES

The subcommittee met in open session pursuant to notice at 9:02 a.m., in room 212, Russell Senate Office Building, Senator John W. Warner, chairman, presiding.

Present: Senators Warner and Levin.

Staff present: Rhett B. Dawson, staff director and chief counsel; James F. McGovern, general counsel; Paul C. Besozzi, minority counsel; Brenda K. Hudson, assistant chief clerk; Frank J. Gaffney, Ronald F. Lehman, José E. Martinez, E. George Riedel, professional staff members; and Karen A. Love, staff assistant.

Also present: Dennis P. Sharon, assistant to Senator Goldwater; Buzz Hefti, assistant to Senator Warner; Jim Dykstra, assistant to Senator Cohen; Bill Furniss, assistant to Senator Quayle; Robert Nichols, assistant to Senator Jackson; Frank Krebs, assistant to Senator Cannon; Gray Armistead, assistant to Senator Byrd; Arnold Punaro, assistant to Senator Nunn; Greg Pallas, assistant to Senator Exon; and Peter Lennon, assistant to Senator Levin.

OPENING STATEMENT BY SENATOR JOHN W. WARNER, CHAIRMAN

Senator Warner. The subcommittee will be in order.

Today we will begin what will perhaps be one of the most extensive series of subcommittee hearings in the recent history of the Armed Services Committee. The purpose of these hearings is to lay a foundation for legislative decisions in connection with the strategic program.

From a personal viewpoint, it is my belief that these hearings work toward reducing the probability of a nuclear war ever occurring.

On October 2, the President announced the outlines of a five-part program designed to strengthen our land-based intercontinental ballistic-missile force, modernize our strategic-bomber force, bring hard-target kill capability to our sea-based deterrent, enhance the air defenses of the United States, and to improve the command, control and communications system which permits us to control our forces in time of peace and war.

The timing of the President's decision, coming as it did after the beginning of the new fiscal year, has placed a great burden upon the Congress to consider this program expeditiously.

I have before me a very lengthy set of hearings. We will not be able to release them now or until such time as we can coordinate this hearing schedule with the final phases of conference between the two Armed Services Committees going on simultaneously. But it was Chairman Tower's decision, at my urging, that we begin to undertake these hearings at the subcommittee level contemporaneously with the final decision taking place in conference.

While many of the President's recommended initiatives do not require additional funding until fiscal year 1983 or later, there are, however, several items in the fiscal year 1982 defense authorization bill now being considered by the Senate and House Conference which are affected by the President's decision. Some of these programs, such as the decision to proceed with the B–1 bomber and to deploy the MX missile on an interim basis in silos, were options considered prior to the President's announcement.

As you will recall, the Senate in the fiscal year 1982 authorization bill fenced money for these programs subject to a two-House veto. Other decisions, such as the retirement of some B–52D bombers in this fiscal year, were not anticipated in congressional action to date and the merits of these elements of the program remain to be addressed by the conference.

Thus, while the hearings which we are about to conduct on the President's strategic modernization program are relevant to our upcoming decisions on the fiscal year 1982 authorization bill, they will lay the groundwork for congressional review of future budget requests in fiscal year 1983 and beyond.

Today we will be hearing from both the Central Intelligence Agency and the Defense Intelligence Agency. I think we need to understand the Soviet threat before we can properly analyze the President's recommended response, particularly because of what is taking place in Europe today, that we spread before the American public and others as much as possible with regard to this threat and how the strategic program, in my judgment, works toward a reduction of the likelihood of any nuclear confrontation.

Because of the sensitive nature of intelligence sources and methods, the subcommittee will conduct much of its hearing on Soviet strategic forces in closed session with staff attendance restricted. But, in view of the fact that the Soviet Union's strategic nuclear forces buildup is of great interest to the general public, we have arranged to have this first portion of our intelligence hearing to be conducted in open session.

I trust that my colleagues and the witnesses will join with me in taking precautions so that no national security information is inadvertently compromised.

Subsequently, we will reconvene in room S–407, to go into classified details.

I have circulated to the members of the panel a list of additional hearings which we will be conducting over the next few weeks. Initially, we will be hearing from administration witnesses and from the military services on our strategic policy, programs and budget. It is my intent also to call witnesses from various governmental agencies and other experts.

As we proceed, I look forward to close bipartisan cooperation with my colleagues on the scheduling of hearings and the calling of witnesses. Our goal is to seek out the facts that we need to make decisions. It is my intention to make these hearings my highest priority in the weeks ahead. The schedule will be intense and the workload heavy, but I urge my colleagues, whether members of the subcommittee or not, to attend as many hearings as possible and to follow the testimony closely.

I pledge that I and my staff will help in every way possible to make sure that we develop a comprehensive and thorough record.

I would like to welcome as our first witness this morning Adm. E. A. Burkhalter, Jr., Deputy Director of the Defense Intelligence Agency.

STATEMENT OF REAR ADM. E. A. BURKHALTER, JR., USN, DEPUTY DIRECTOR, DEFENSE INTELLIGENCE AGENCY, ACCOMPANIED BY DENNIS CLIFT, DEFENSE INTELLIGENCE OFFICER; ROGER DENK, SENIOR INTELLIGENCE ANALYST; HENRY HOFFMANN, JR., STRATEGIC AIR DEFENSES; JOHN SELLERS, ABM AND LASERS; JIM MILLER, STRATEGIC FORCES; JEROME BEATTY, STRATEGIC AIR; ART NEVINS, C^3, COMMAND, CONTROL AND COMMUNICATIONS; DON WOOD, CIVIL DEFENSE; JOE ARDINGER, STRATEGIC ESTIMATES; JIM McCRERY, DEFENSE INTELLIGENCE OFFICER FOR STRATEGIC PROGRAMS; DAVID PHILLIPS, INTELLIGENCE ANALYST; CHARLES MUNSON, INTELLIGENCE ANALYST; AND FRANCIS DUNLAP, INTELLIGENCE ANALYST

Admiral BURKHALTER. Mr. Chairman, thank you very much for the opportunity to be here today and present before your subcommittee discussion on Soviet strategic forces.

I am personally pleased to be DIA's principal witness and to have with me a number of experts on various aspects of Soviet strategic power, both in the open session and in the following closed one.

Senator WARNER. Why don't you introduce those witnesses?

Admiral BURKHALTER. Yes, sir, I will ask them to stand and introduce themselves. Starting with Mr. Dennis Clift.

Mr. CLIFT. Dennis Clift, Senator Warner.

Mr. DENK. Roger Denk, sir.

Senator WARNER. Would you gentlemen care to come up and join the admiral?

Admiral BURKHALTER. I will ask these two gentlemen to join us, and Mr. McCrery, who is our Defense Intelligence Officer on this subject.

I would like the others here to introduce themselves as soon as these gentlemen are settled.

Mr. MILLER. I am James Miller.

Mr. ARDINGER. Joe Ardinger.

Mr. HOFFMANN. I am Henry Hoffmann, Jr.

Mr. SELLERS. I am John Sellers.

Mr. DUNLAP. I am Francis Dunlap.

Colonel **Nevins.** Colonel Nevins.

Mr. **Beatty.** I am Jerome Beatty.

Dr. **Phillips.** I am David Phillips.

Mr. **Munson.** I am Charles Munson.

Mr. **Wood.** Donald Wood.

Admiral **Burkhalter.** I think from these experts I have with me we can answer, I hope, any questions you might have in this vitally important area of Soviet strategic capabilities.

As you well, know sir, over the past 20 years the Soviet Union has devoted substantial resources to the development and deployment of its strategic nuclear forces. It has moved from a position of clear inferiority at that time to one in which its nuclear forces are generally recognized as equal to superior in certain measures to those of the West.

Soviet efforts addressed their ICBM capabilities, their submarine-launched ballistic-missile capabilities and to a lesser extent their bomber-force capabilities. I propose to summarize briefly their current status in each of these areas.

In addition, I will also discuss the status of Soviet air and ballistic-missile defenses. These comments are drawn principally from the booklet, "Soviet Military Power," which was recently made available by Secretary Weinberger to the public.

STRATEGIC FORCES

First, as a point of departure, let me trace the history of these strategic forces since 1964. At that time the Soviets had only a few operational SLBM's, many of which had to be launched from surfaced submarines. While the U.S.S.R. had more ICBM's than SLBM's, the number was significantly fewer than the U.S. ICBM's. Moreover, the majority of Soviet ICBM's were inaccurate systems housed in launchers that were clustered together and unhardened, making them vulnerable to attack.

The U.S.S.R. then embarked on high priority development and deployment programs first focused on increasing single-silo ICBM deployment to a level greater than that of the United States. A similar buildup of SLBM launchers on modern, nuclear-powered ballistic-missile submarines was underway by the late sixties.

These massive 1960 ICBM and SLBM deployment programs, largely centered on the SS–9 and the SS–11 ICBM's and the SS–N–6/Yankee weapon systems, provided the foundation from which subsequent strategic nuclear modernization programs were to grow.

The seventies modernization, which only now are reaching a conclusion, were largely technological in nature. More than half of the 1,398 Soviet ICBM launchers have been rebuilt to house the newer SS–17, SS–18, and SS–19 ICBM's in vastly more survivable hardened silos. These ICBM's, all of which are MIRV'd, are in the forefront of ICBM technology.

Certain versions of the SS–18 and the SS–19 are among the most accurate ICBM's operational anywhere. Together, these systems have the capability to destroy a large percentage of the more than 1,000 ICBM launchers using only part of their total numbers.

The Soviet SLBM/SSBN modernization began in the early seventies with the introduction of the long-range SS–N–8 SLBM deployed on

Delta class SSBN's. By the late seventies the Soviet were producing the MIRV'd SS–N–18 and deploying it in a modified version of the Delta class submarines.

In 1979 a new SLBM, the MIRV'd SS–NX–20, was first tested. This SLBM will probably reach operational status by the mideighties, deployed in the new Typhoon class SSBN submarine.

These technological advances in ICBM and SLBM weapon systems have been accompanied by major improvements in communications systems and in the organization of the forces as well.

Soviet intercontinental bomber forces retain most of the Bear and Bison bombers and refueling tankers which were initially produced in the fifties and sixties. Improvements to their avionic and weapon systems have been made, however, since the early seventies. The U.S.S.R. has also deployed over 70 Backfire bombers to operational long-range aviation units and is producing about 30 more of these supersonic bombers each year.

While Backfire appears to have been given primarily theater and maritime missions, it has a strategic capability and cannot be ignored as a potential intercontinental bomber threat.

Current force levels of Soviet intercontinental strategic nuclear forces include 1,398 ICBM launchers, 950 SLBM launchers, and 156 long-range bombers, including Backfire. These delivery systems are loaded with some 7,000 nuclear warheads. Deployment programs now under way indicate that the number of warheads will increase over the next few years.

LONG-RANGE THEATER MISSILES

Since the late fifties, the Soviet have dedicated significant numbers of nuclear, land-based missiles to theater warfare missions. No theater has been neglected, but the European theater has always commanded the greatest attention. The first medium-range ballistic missiles were fielded in the late fifties, followed by improved MRBM's and new intermediate-range ballistic missiles in the early sixties.

More than 700 fixed launchers for these systems, the SS–3 and SS–4 MRBM's and the SS–5 IRBM, were operational at peak deployment in the midsixties. All but approximately 100 were directed at targets in or related to the European theater. The remainder were directed against the Middle East, South Asia, and the Western Pacific littoral. China was not then a target.

In the late sixties, the Soviets began to draw down these, by then, obsolescent missiles, replacing them with ICBM's and adding coverage of their new enemy—China.

This situation remained unchanged until 1977 when the SS–20 IRBM first reached operational status. Previously, the theater-dedicated strategic nuclear missiles were based at fixed, vulnerable sites, and each missile carried only one warhead—although provisions for force reconstitution and refire were made.

The SS–20 eliminated most of these weaknesses. Its launchers are highly mobile, and each SS–20 is fitted with three very accurate and independently targetable MIRV'd warheads. Moreover, each SS–20 unit is equipped with refire missiles—one per launcher—and each refire missile is fitted with three warheads.

Thus, the firepower of the theater strategic nuclear missile forces is being greatly multiplied, even though the Soviets are withdrawing older SS–4's and SS–5's from the forces as the new SS–20's are deployed.

Soviet strategic operational employment plans, based on Soviet writings, point to seizing the initiative through preemptive attack. Such an attack would effectively reduce the impact of a retaliatory strike, limiting damage to the U.S.S.R. While this is the preferred Soviet scenario, the Soviets also have the capability to launch on tactical warning if necessary.

Regardless of how a war started, the Soviets view the nuclear forces and command and control of an enemy as their first priority targeting objectives. This would include such targets as ICBM launch silos, launch control facilities, support and maintenance facilities, strategic bomber bases, submarine berths, and loading facilities, and nuclear storage and production facilities.

Priority 2 target would be those that would negate the ability to project military power abroad. Such targets would include depots, transportation centers, military stockpiles, conventional force bases, and training centers. Other targets would be those that limit the capacity of the enemy to conduct a protracted war, such as military industries, refineries, and electrical power plants.

ICBM DEPLOYMENT

Turning now to a more detailed discussion of these strategic systems, the Soviet ICBM force is deployed in missile complexes generally located along, and within access of, the Trans-Siberian Railway. A typical ICBM complex includes a main base support area, a facility for transferring missiles and equipment from rail to roads, and launch control centers, each with a group of launch silos it controls. Each complex is comprised of a number of launch groups; each launch group is comprised of either six or ten launch silos.

The ICBM force currently consists of 580 SS–11's, 60 SS–13's, 150 SS–17's, 308 SS–18's, and about 300 SS–19's. The great majority of the 17's, 18's, and 19's are equipped with MIRV's, not all. The Soviet are expected to complete their current ICBM modernization program in the early eighties.

SS–20 DEPLOYMENT

As of July 1981, some 250 SS–20 launcher/missile sets equipped with a total of 750 nuclear warheads had been deployed. Of these, 175 with 525 warheads are deployed opposite the NATO countries. There is no sign that the deployment is slackening.

Since January 1981, the pace of the SS–20 base construction has increased, particularly opposite the NATO nations. At bases known to be under construction currently, another 65 launchers with some 195 warheads will be deployed. Perhaps as many as 100–150 additional launchers with 300 to 450 warheads could be fielded before the deployment program reaches its conclusion.

While this modern nuclear force will continue to exhibit the full coverage of theater targets around the Soviet Union's periphery, it will be concentrated primarily against the European theater.

ICBM RELOAD CAPABILITY

The Soviets could have contingency plans for reloading and refiring missiles from ICBM launchers which already have fired an initial round. The cold-launch technique employed by the SS–17 and the SS–18 lends itself to such a capability in a protracted nuclear conflict. Additionally, the Soviets may be able to reconstitute a portion of their hot-launched missile force—SS–11's, SS–13's, and SS–19's—as well.

The Soviets probably cannot refurbish and reload silo launchers in a period less than several days, thereby avoiding violation of the SALT II agreement which precludes a rapid reload capability for ICBM launchers.

ICBM PRODUCTION

Development of strategic missiles is the function of four major Soviet design bureaus. These bureaus are supported by activities at main assembly plants, at hundreds of component production plants, at test ranges, and at launch complexes. The Soviet missile development program, therefore, shows no signs of slackening.

We expect improvements leading to new missiles and to the modification of existing missile systems. These improvements are expected to continue the trends toward greater capabilities against such hardened military structures as ICBM silos.

As the accuracy of future Soviet missiles increases, it will be feasible for the Soviets to reduce the size of individual RV's and thereby to increase the number of MIRV's carried on each missile, assuming no external constraint such as that imposed by arms limitations.

It is also anticipated that the Soviets will develop solid-propellant ICBM's to supplement or replace some of the current liquid propellant systems. The SS–16, a small ICBM about the same size as the Minuteman, is a solid-propellant ICBM which was developed by the Soviets in the early seventies for mobile deployment. The system was never deployed.

Future solid-propellant ICBM development and deployment could give the Soviets additional flexibility in handling and in basing their missile forces. Future missiles are expected to include upgraded versions of the present systems as well as new missiles.

SLBM FORCE

I will now discuss the Soviet SLBM force. The Soviets continue to expand and modernize their SLBM force, now consisting of some 62 submarines carrying 950 modern SLBM's with a total of almost 2,000 nuclear warhead reentry vehicles.

In the past 7 years, the U.S.S.R. has produced 30 SSBN's, and the new 20-tube, very large Typhoon SSBN was launched in 1980. This new SSBN/SLBM system will be operational in the mideighties and is expected to include the SS–NX–20 missile. The SS–N–8 and SS–N–18 on Delta class SSBN's permit the Soviets to hit targets in the United States from their home ports, and it is possible that the Soviets will develop follow-on SLBM's for these as well as the SS–N–6 on the Yankee SSBN's.

The SS–N–6/Yankee I weapon system is composed of the liquid-propellant SS–N–6 missile and the 16-missile tube Yankee I Class SSBN submarine. The weapon system became operational in 1968.

There are different versions of the SS–N–6 SLBM. One version carries a single RV and has a maximum operational range of about 2,400 to 3,000 kilometers. Another version carries two RV's and was the first Soviet SLBM to carry multiple RV's. This SS–N–6 has a maximum operational range of about 3,000 kilometers.

The SS–N–8/Delta weapon system includes the long-range, two-stage, liquid-propellant SS–N–8 SLBM and the 12-missile tube Delta I and 16-missile tube Delta II class SSBM submarines.

The SS–N–8 was a significant change from previous Soviet SLBM's, even though liquid-propulsion technology was employed, because this was the first two-stage SLBM. The SS–N–8 has a maximum operational range of about 9,000 kilometers and carries one RV.

The S–N–18/Delta III weapon system is composed of the SS–N–18 two-stage, liquid-propellant, SLBM and the 16-missile tube Delta III-class SSBN.

The SS–N–18 is the first Soviet SLBM to demonstrate a MIRV capability. Its maximum operational booster range is about 6,500 to 8,000 kilometers, depending on the payload configuration. Greater range is possible if the S–N–18 postboost vehicle, or small third stage, is used to push the payload further along its trajectory, in addition to maneuvering to place reentry vehicles in line with intended targets. A single RV version is also operational.

With the advances achieved in other Soviet strategic missile programs, it is assumed the missile for the new Typhoon will be more capable than the SS–N–18 carried on the Delta III, possibly having greater range, better accuracy, higher payload, and more warheads. Today the Delta III submarines can cover most U.S. targets from the relative security of their home waters. The Typhoon, at 25,000 tons submerged displacement, twice the size of the Delta III, will certainly have no less capability.

Senator **Warner**. If you could, make a comparison between the Typhoon and Trident with just a few sentences, please? I think I know, but it is wise to have it in the record.

Admiral **Burkhalter**. It is about 60 percent larger, sir, than the *Ohio* class.

LONG RANGE AVIATION

Another arm of the Soviets' strategic capability is long-range aviation [LRA], which is comprised of more than 800 strike-and-support aircraft. Three-quarters of these are intermediate range TU–16/Badger and TU–22/Blinder: the long-range force includes more than 150 TU–95/Bear and M-type/Bison, as well as some 70 Tupolev Backfires.

The primary mission of LRA is to perform intercontinental and peripheral nuclear or conventional strike operations. The force also performs long-range reconnaissance, antinaval strikes, and electronic warfare missions.

Soviet long-range bombers complement the land and sea-based strategic missile forces, and in the event of intercontinental nuclear war they probably would be employed in follow-on nuclear strikes after initial missile strikes. The manned bombers provide the Soviets a degree of flexibility and diversity in their strategic attack forces not available with ballistic missiles.

The Tupolev Backfire is the latest addition to the LRA forces. The Backfire is a twin-engine, swing-wing, turbofan-powered bomber capable of carrying free-fall bombs or air-to-surface missiles. Placed in service in the midseventies over 70 are deployed with long-range aviation with a like number assigned to Soviet naval aviation. This aircraft is still in production at the rate of about 2½ aircraft per month, or 30 a year.

The Backfire is a versatile, multipurpose aircraft capable of performing nuclear strike, conventional attack, antiship, and reconnaissance missions. Its range and payload capabilities are comparable to those of the Bison—more than 12,000 pounds payload and a range in excess of 8,900 kilometers with a bomb load. Its versatility makes it an excellent strike aircraft for peripheral and possibly for intercontinental missions. The Backfire can be equipped with probes to permit inflight refueling which could increase its range and flexibility.

The 600 intermediate range TU-16/Badger and TU-22/Blinder aircraft represent a significant capability for use in theater strike operations. The TU-16/Badger is by far the most numerous aircraft in the force. Ten variants of this twin-jet, subsonic aircraft have been produced. These variants have expanded the mission of the Badger beyond standard bombing to include electronic countermeasures, air-to-surface missile delivery, reconnaissance, and refueling.

The sweptwing, supersonic TU-22/Blinder is powered by two afterburning turbojet engines. The missile-carrier variant can deliver an AS-4 to a range of about 4,090 kilometers. The Blinder has also been produced in free-fall bomber, reconnaissance, and trainer versions.

The Soviets have an air-to-air refueling capability for long-range aviation. While they have not yet developed an aircraft specifically for refueling, some 30 modified Bison aircraft serve as tankers. The Soviets evidently are developing a tanker version of the IL-76/Candid transport aircraft. If so, the system is not yet deployed in sizable numbers.

STRATEGIC DEFENSES

Turning to defensive forces, the Soviets maintain the world's largest strategic defenses. Their efforts encompass each of the primary areas of defense concern: Air defense, ballistic missile defense, antisatellite defense, and civil defense. When combined with the strong counterforce orientation of Soviet strategic offensive forces, these defense efforts point to a strategic concept of layered, indepth defense of the homeland.

This concept starts with preemptive attacks, if possible, against Western nuclear offensive forces and their command and control. It then proceeds to active defense against weapons en route to targets and to the preparation of passive defenses to protect the Soviet governmental infrastructure and society against the effects of weapons penetrating the defenses.

The technical problems associated with defense against air and missile attack are immense. Although Soviet defenses characteristically have fallen short of being able to handle fully the tasks they face, the

U.S.S.R. has persevered and is today entering a period of weapons system deployment aimed at measurably improving capabilities, primarily in air defense.

Soviet air defenses combine the interceptor aircraft with early warning networks and surface-to-air missiles. There are more than 5,000 early warning and height-finding air defense radars throughout the U.S.S.R. During the past decade, the U.S.S.R. has continued to modernize its air defense forces which currently consist of some 2,500 aircraft, including the MIG–23/Flogger, MIG–25/Foxbat, SU–9/Fishpot, SU–15/Flagon, TU–128/Fiddler, and YAK–28/Firebar.

The Flagon and the Flogger swing-wing interceptor aircraft are the workhorses of today's air defense interceptor force, comprising two-thirds of the total inventory. The Flagon, first deployed in the late sixties has been improved during the seventies through additional armament and modernized avionics. The Flogger is the most widely deployed interceptor.

The MACH–3 Foxbat, designed to counter a high-altitude threat, can operate at 25,000 meters. A cutback in its production in 1977–78 suggests that Soviet policy shifted to meet requirements for a low- rather than a high-altitude threat.

A number of new interceptor aircraft types could enter the air defense force over the next decade. Soviet research and development most likely will emphasize the development of look-down/shoot-down systems designed to be able to operate above their intended targets, identify and track them against the cluttered background of the Earth, and fire missiles capable of functioning in the same environment.

To increase the effectiveness of their force, the Soviets are developing an increasingly effective airborne warning and control system to detect low-altitude penetrators. An earlier attempt, the TU–126/Moss, carrying a large rotodome radar on its back, does not appear to have met the need.

The Soviet strategic surface-to-air missile force is composed of some 10,000 launchers deployed at over 1,000 fixed sites within the borders of the U.S.S.R. These launchers can actually accommodate over 12,000 missiles because many of the launchers have multiple launch rails. In addition, other Warsaw Pact countries have over 1,000 launchers deployed in Eastern Europe.

The SA–2, initially operational in 1959, has been the backbone of Soviet SAM defenses. It is deployed throughout the Soviet Union and is used by non-Soviet Warsaw Pact and other communist and Third World nations as well. The SA–3 is now deployed throughout the U.S.S.R. and Warsaw Pact at over 400 sites. It provides low-altitude coverage and point defense to selected strategic areas.

The SA–5 was first deployed in 1963, and deployment continues today with over 100 complexes operational throughout the Soviet Union. The SA–5 is a long-range interceptor designed to counter the threat of high-performance aircraft.

The SA–10 system is the latest Soviet strategic SAM system and is designed for increased low-altitude capability. With radars which are more advanced than previous systems, the SA–10 was designed to counter low-altitude manned aircraft, although it may have some capability against cruise missiles.

In all, the Soviets maintain a vast network of SAM sites, which act in concert with the large numbers of interceptor aircraft. This network is enhanced by a virtual 100-percent high-altitude coverage of early warning radars, and presents a formidable barrier to any would-be attackers from the air.

ABM DEFENSE

The Soviets maintain the world's only deployed antiballistic missile defense. The system includes peripherally-located Hen House ballistic missile, early warning radars, and four operational ABM launch complexes near Moscow. The Moscow defenses currently include the ABM-1b/Galosh interceptor missiles, battle management radars, and missile engagement radars.

The Soviets have continued to improve their ballistic missile early warning capability by constructing large phased-array radars to supplement the old Hen House network and to close existing gaps in coverage.

They also continue to engage in an active and costly ABM research and development effort, which they are permitted to do under the ABM Treaty of 1972. Their main concentration appears to be on improving the performance of their large phased-array detection and tracking radars, and developing a rapidly deployable ABM system.

When development of this system is completed, its main elements could be deployed in the Moscow area to replace or supplement the existing systems. Such deployment would further upgrade Moscow's defenses, and could provide operational experience for broader deployment. Improving the Moscow defenses is also allowed by the 1972 ABM Treaty as long as the 100 interceptor launcher limit is not exceeded. Deployment in additional locations is prohibited by the treaty.

ANTISATELLITE DEFENSE

The Soviets' defensive posture extends into space as well with the only antisatellite system known to be operational. The demonstrated Soviet nonnuclear low-altitude orbital ASAT interceptor poses a known, if presently limited, threat to some U.S. satellites. It is anticipated the Soviets will continue work in this area with a goal of negating satellites in high orbit, as well as developing more effective kill mechanisms, perhaps using a laser or some other type of directed energy weapon.

CIVIL DEFENSE

Complementing their active defensive program is a nationwide civil defense structure under military control. Full-time civil defense staffs exist at each echelon of the Soviet administration structure. In peacetime more than 115,000 people work full time in the program. In wartime, the number could be upwards of 16 million. The program costs more than the equivalent of $2 billion annually.

Protection of their leadership has been a primary objective of the Soviets. Given a war-crisis warning of only a few hours, the survival and effective functioning of the 110,000 government and other officials necessary to lead the Soviet Union may, therefore, be possible. This protection has been achieved through the construction of deep, hard urban shelters and countless relocation sites. Leadership protection, from the national to local level, is intended to assure the maintenance of control throughout the society.

Mr. Chairman, this broad review of Soviet strategic offensive nuclear forces and defenses has addressed their most significant aspects. I am sure that you and the members of the subcommittee recognize that both time and classification limitations have precluded addressing every detail.

As I mentioned in my introductory remarks, I have with me some experts in the various fields covered by this testimony and the recent paper on Soviet military power. I would be pleased to address personally or to have the most knowledgeable person present address any questions you may have, recognizing that security considerations may require that some answers be provided in a classified session.

I thank you for the opportunity to discuss this important topic, and await your questions.

Senator WARNER. Thank you very much, Admiral.

I expect you and I have been working in this area for better than a decade now.

Admiral BURKHALTER. Yes, sir, we have.

SOVIET VERSUS U.S. BUILDUP

Senator WARNER. It appears to me that there is a disparity in the momentum between the Soviet buildup and the U.S. buildup. Would you care to give your evaluation in general terms of the momentum of the two nations?

Admiral BURKHALTER. Sir, I can give you one example that I have used many times in the past, which I think is a very classic one, in the SSBN system. The United States deployed the 41st of their Polaris and SSBN's in 1968 when the Soviets were putting their first Yankee SSBN to sea. Since then they have built and deployed over 62 of the Yankee and Delta class SSBN's and they now have this new Typhoon class SSBN that we discussed earlier in the testimony. We will commission our first follow-on SSBN, the U.S.S. *Ohio*, this next Saturday in Connecticut.

Senator WARNER. Let's use as a threshold date the spring of 1972 when SALT I was signed. Between 1972 and today, how many new nuclear launcher programs has the United States undertaken?

Admiral BURKHALTER. Sir, if my memory is correct, our Minuteman force was completely deployed then and it has been modernized but we have deployed no new nuclear force since that time.

Senator WARNER. Considering that the Trident has been built since.

Admiral BURKHALTER. The Trident weapons system, which of course will be the complementary system to go with the *Ohio* class.

Senator WARNER. Correspondingly, since SALT I, how many new launch designs have the Soviets had?

Admiral BURKHALTER. I mentioned the SS-17 and and SS-18 and SS-19, along with the SS-N-8 and SS-N-18 weapons systems, and now the follow-on system, the SS-NX-20 that we discussed during the briefing.

Senator WARNER. Wouldn't you consider the Typhoon a new launch system?

Admiral BURKHALTER. Yes, sir.

Senator WARNER. What about the Backfire?

Admiral BURKHALTER. The Backfire is of course a theater weapon which we believe has a capability as an intercontinental weapon as well.

Senator WARNER. So the Soviets in this same period of a decade have initiated new programs on land, sea, and air. That is right?

Admiral BURKHALTER. That is correct.

Senator WARNER. In what areas of strategic capability do the Soviets lead the United States, and in what areas does the United States lead the Soviets?

Admiral BURKHALTER. Sir, I think to give you a precise answer here would be difficult, we would really prefer to answer that for you in a classified session.

Senator WARNER. I would appreciate that, and a number of my questions will undoubtedly result in that response. But again, bearing in mind the need, and I was among those who urged the administration to come forward with this booklet, the need to get more facts before the public, because this particular series of strategic programs is probably the biggest dollar figure in the budget, certainly on the military side. Let's see what we can do to help the American public better understand the problem that confronts the United States. I will repeat the question:

In what areas do you feel the Soviets lead the United States, and in what areas do we lead the Soviets?

Admiral BURKHALTER. Sir, I would like to answer that by referring to our testimony and to this booklet.

Senator WARNER. If you think it is covered there we won't be repetitious.

Admiral BURKHALTER. I would like to repeat, if I might, that they have developed the SS-18 and -19 systems which we consider to be as accurate as any weapons system that we have today. The vast array of systems that they have developed over the past 8 to 10 years very clearly has given them a much larger numerical superiority. They have superiority in many of those numbers. As I mentioned, they have accuracies that are approaching those of the best weapons systems in the world today.

They have developed a MIRV capability, independently targetable reentry missiles. during the past decade, as you mentioned the Backfire long-range bomber, also they have continued to improve their other bomber systems, and they have continued to improve the silo basing of their missile systems by continuing to harden them.

To give you precise details on those superiorities I think we would like to defer to the classified session.

SOVIET EXPENDITURES ON STRATEGIC FORCES

Senator WARNER. How much does the Soviet Union spend on strategic forces, say, in this current fiscal year and in the projected 5-year program.

Admiral **Burkhalter**. Sir, during the seventies they spent about $350 billion in excess of what we have on military investment; that is military R.D.T. & E., procurement, and military construction.

As you are aware, we estimate that they are spending between 12 and 15 percent of their GNP on their military.

In the latter part of the seventies they began to shift some of their resources into their more conventional forces. What we are seeing today is a result of the high concentration of resource effort in strategic systems during the early part of the seventies.

[Additional information to earlier question by Senator Warner:]

Estimated Soviet Defense Expenditures

Senator **Warner**. How much does the Soviet Union spend on strategic forces, say, in the current fiscal year and in the projected 5-year program?

Answer. The Soviets will likely spend between 35 and 36 billion dollars for the current fiscal year on their strategic programs. By 1985 it is estimated that these expenditures will total between 40 and 43 billion dollars, as expressed in current (fiscal year 1982) constant dollars.

Senator **Warner**. Let us try once again. Could you run a comparison on one fiscal year, say our 1982 fiscal year, or whatever comparable period, in the Soviets' effort?

Admiral **Burkhalter**. Sir, I am not sure if I can give you these. I can give you of course the total defense spending, which we can estimate, of a total of $115 billion for U.S. total systems as opposed to about $175 billion for the Soviets.

Again, sir, I don't have the precise dollar figures on strategic systems here before us but we would like very much to be able to give you that.

Senator **Warner**. I am going to go through your statement and ask a series of questions and, again, I hope you can expand on some of the answers.

Admiral **Burkhalter**. I would like to give you one other statement which Mr. McCrery has given me.

[Additional information follows:]

To put this difference in perspective: If this $350 billion had been available for U.S. military investment, it would have been enough for the United States to procure 1,500 F-16's, 1,500 F-18's, 1,000 advanced helicopters, 20,000 XM-1 tanks, 20 CG-47 guided missile cruisers, 50 Los Angeles class attack submarines, 20 Trident submarines with missiles, the entire MX and ALCM programs, with a residual $10 billion each year of the 1970's.

The Soviets have used this incremental investment to achieve and maintain their numerical advantage, producing military equipment at typically two to three times the U.S. rate. In addition, they have used their massive support of R.D.T. & E. in recent years to evolve equipment of high levels of sophistication.

STRATEGIC FORCES FACING CHINA

Senator **Warner**. On page 6 you refer to China as being the new enemy of the Soviet Union. To what extent have they diverted their strategic capabilities to meet the threat of China?

Admiral **Burkhalter**. As we mentioned, the majority of the new SS-20 weapons systems have been targeted against our NATO allies in Europe and in the remainder of them, roughly one-third, have been targeted against China as well as some targets in Southeast and Southwest Asia. But we think the majority of those have been targeted against China and of course their ICBM's can also be targeted against

China as well as against the United States, which is a matter of a targeting program involved with that weapons system.

Senator WARNER. Has there been a commensurate buildup of the Chinese strategic forces?

Admiral BURKHALTER. The Chinese of course are developing strategic forces which are not anywhere near as capable today, but they are developing them and we would expect to see a significant improvement in Chinese capabilities during the eighties.

Mr. McCrery points out that in conventional forces the Soviets have 45 divisions in eastern Siberia that are targeted primarily against China.

COUNTERFORCE TO SS-20

Senator WARNER. On page 6 you had begun your discussion of the SS-20 and you characterize its launchers as highly mobile. In view of that system and its rapid growth and its mobility, what is the likely counterforce that can be applied against them?

Admiral BURKHALTER. Of course with that kind of a mobility, sir, as long as we are able to try to track a system like that, the most likely counterforces, and this is a personal opinion of mine, would be with some type of a manned bomber system or SSBN's or ICBM's in conjunction with some systems with which you could find those weapons and provide rapid retargeting information to SSBN's or ICBM's.

The other possibility is through our own theater nuclear forces on the European land mass.

EUROPEAN VIEWS ON IRBM DEPLOYMENT

Senator WARNER. Touching on the question of Europe, of course you have been studying, and all of the others have, the growing antagonism toward the proposed deployment of our intermediate strategic systems in that area.

Would you care to comment on that?

Admiral BURKHALTER. Yes, sir. I believe, and I believe that many of our allies share this with us from discussions that I have had with our allies. I think we find today as strong an antiwar and antinuclear sentiment as we have seen in the last two decades. There are some people that believe it is as strong as at any time since World War II.

CONVERTIBILITY OF SS-20'S TO ICBM'S

Senator WARNER. On the SS-20, can you describe in open testimony potential convertibility to an ICBM of that particular class of missile?

Mr. MILLER. The SS-20 utilizes two stages of an ICBM that was built originally as a three-stage missile with a post-boost vehicle and a single RV. It would be a relatively simple matter to reconfigure the SS-20 to add the third stage, and RV of the SS-16, and make it into an SS-16 with an ICBM capability.

Senator WARNER. That would continue with the three warheads?

Mr. MILLER. Yes; it could be reconfigured in that way.

Senator WARNER. With the MIRV'ing ability?

Mr. MILLER. Yes, sir.

ICBM MODERNIZATION

Senator **Warner.** On page 9 at the top of the page you make the following statement: "The Soviets are expected to complete their current ICBM modernization program in the early eighties."

Now, do you have any indication there is any follow-on program?

Admiral **Burkhalter.** Sir, we have seen the Soviets developing follow-on systems in a pattern now for the past 15 to 20 years. We know that they have continued to modernize their construction facilities as stated in the Soviet military power document which you have. The document states that the Soviets have 135 different major weapons producing plants throughout their country today.

With modernization that they have put into both strategic and conventional weapons facilities we have every reason to believe that there will be follow-on systems to the current ones. However, the modernization to which your statement is the modernization of the SS–17's and 18's and 19's with more MIRV's and more accurate systems. Yes, again we believe there would be a follow-on system.

MOBILITY OF SS–20

Senator **Warner.** Returning to the SS–20, doesn't the mobility of the SS–20 mean that the Soviets have considerable latitude in bringing the SS–20 to bear on targets in Western Europe from deployments in the Urals, or in the south against the People's Republic of China?

Admiral **Burkhalter.** Yes, sir, it is a very formidable system.

Senator **Warner.** Further down on page 9 you state there is no sign that the deployment slackens. Since January 1981, the pace of the SS–20 base construction has increased, particularly opposite the NATO nations. At bases known to be under construction currently another 65 launchers with some 195 warheads will be deployed.

Could you elaborate a little bit on the mobility of the weapon itself as it relates to the base concepts of the SS–20?

Admiral **Burkhalter.** If you will permit me I would like one of our experts to handle that question.

Mr. **Miller.** Yes, sir, the SS–20 is both on-road and off-road mobile: They operate in the metropolitan areas and in the field. There is no reason why it cannot be moved in a rapid manner.

The procedure that is used by the Soviets is primarily a scatter-on warning system whereby they are primarily based within a secure complex, in a period of crisis or period of warning they will move out to the surrounding country, and fire from predesignated launch positions.

Senator **Warner.** What distances can they deploy? Theoretically there is no limitation, really?

Mr. **Miller.** There is no limit.

Senator **Warner.** Except they have to be near their base for certain logistical support.

Mr. **Miller.** They carry their own communications, their own guards, and their own logistic support with them, so there is no limitation, really. We can expand on that in the classified section if you so desire.

Senator **Warner.** I just wanted to get a little better idea of the versatility of this particular strategic system, and what it is we have in our arsenal today, or our proposed arsenal of deterrent forces that is comparable.

What do you consider the weapon that is most nearly comparable to this, Admiral?

Admiral BURKHALTER. We don't have anything that is exactly comparable to that, sir. As you may know, the cruise missiles that we are developing will provide us some kind of a capability that is comparable and the improved Pershing II will give us the nearest thing we will have to the SS-20. We have really nothing of this type of sophistication and complexity either available or on the drawing boards today, to my knowledge.

IMPROVED ACCURACY OF SOVIET WEAPONS

Senator WARNER. In your statement you refer to "accuracy of the future Soviet weapons increases." Could you expand a little bit on how they have improved their targeting and accuracy in this past decade?

Admiral BURKHALTER. As we mentioned during the testimony, sir, back in the sixties they were highly inaccurate systems, both their ICBM's and their SSBN's. As they brought the new sytems on line, the SS-17, 18, and 19 they advanced with an accuracy improvement program to the point today that we feel that these improved SS-18's and 19's with MIRV'd warheads are accurate as any systems that are available in the Western World.

We believe that having developed that kind of capability that they will continue to strive for increased accuracies throughout this decade, this leads us to the statement that they would have the capability to increase the number of MIRV's on each missile and, therefore, have more flexibility.

Senator WARNER. Well, in comparability of accuracy, would you say the Soviet targeting is as accurate and capable as any system in the Western World?

Admiral BURKHALTER. Yes, sir, I would. That statement is also for the record in the "Soviet Military Power" book.

Senator WARNER. They have reached certainly parity in that area?

Admiral BURKHALTER. Yes.

Senator WARNER. And that was an advantage the United States possessed almost from the inception.

Admiral BURKHALTER. Yes, sir, that is correct.

Senator WARNER. In the nuclear deterrent?

Admiral BURKHALTER. Yes.

LARGE SIZE OF TYPHOON

Senator WARNER. Also in your statement you begin a discussion about the Typhoon and, as you mentioned, it is approximately 60 percent larger than the *Ohio* class Trident submarine. What can you tell us about why they added that 60 percent to the boat? Was it primarily in the missile area, living quarters, powerplant, or what advantages did that add?

Admiral BURKHALTER. I think the size is there for several purposes. One, of course, is that this SSBN will carry 20 tubes versus 16, which is the largest that the Delta class carried. As you might recall, the

Soviet Delta class, Delta I, II, and III, have been extensions of their Yankee class. They have taken the basic fundamental class and as they have done in many of their weapons systems, they take a good basic proven system and just continue to improve on it.

The Typhoon, we believe, is a radical departure. With these 20 tubes, of course, it takes a bigger ship and we believe that they will be larger tubes to accommodate larger missiles. When they do that they have obviously then added a significant increase in both weight and size required for those missiles and therefore it requires a larger ship. They may well have made some improvements in living accommodations, and undoubtedly have made improvements in the engineering systems, and quite possibly in systems that would make the ship less vulnerable to attack.

We don't know a great deal about the Typhoon at this time but I think those are logical expectations that we would expect from our previous observations of the Soviets in developing this very, very capable force.

Senator **WARNER**. But Admiral, the *Ohio* class is comparable in number of tubes, an equal number of tubes. That still doesn't, in my judgment, adequately explain the discrepancy in the size of these two vessels.

Admiral **BURKHALTER**. I think it may well be an entirely different concept in design, Mr. Chairman, and we would like to provide you with more details of that in the closed hearing. But based on the size of the Delta class for the tubes that they have employed we would logically have expected a significantly bigger ship for these missiles and it could be that, if the missiles are considerably longer than ours, for example, even though we are using larger missiles in our *Ohio* class, we may well be employing a smaller, more efficient missile than the Soviets have. It is clearly by any version the largest submarine that has been built in the world, and we think it would give them a tremendous capability.

We do have some information we can provide in more detail.

Senator **WARNER**. Can you provide in the open session by follow-on ships, how many?

Admiral **BURKHALTER**. Of the type of the class, let me see if my experts can help me out. I would say at least 10 or 12 of these, and probably more once they turn them out and once they get introduction.

Do we have any unclassified figures?

Jim McCrery tells me that 10 to 12 is probably the best number we have at the time. But as you know they have tremendous facilities for turning out their submarines and they have built a new larger facility at their main yard for their northern fleet, and we think this will accommodate a sizable type of force if that is the Soviets' desire.

SOVIET THREAT TO B-1

Senator **WARNER**. On pages 18 and 19 of your statement you describe in detail the antiair protection system the Soviets have. This draws our attention to a major issue in these hearings before the Congress, namely, the B-1 bomber program.

Have you made an assessment as to the penetrability of the B-1 in this air defense system in the decade of the eighties and early nineties, and if so, can you share it with us?

Admiral **Burkhalter**. Mr. Hoffmann, can you give us an answer on that which we could use in this unclassified hearing?

Mr. **Hoffmann**. It will have to be limited but in essence I think the technology in air defense is probably roughly better or equal to U.S. technology, and I think we are now entering essentially a numbers game. The Soviets will have to add a lot of brand new technology which they have developed and it is a question of how long it is going to take them to deploy that much over the entire Soviet Union, because the defense essentially has to defend the whole country. It is going to take them quite a while to deploy these newer systems in very, very large numbers.

So it is a numbers game and catchup as to how long it is going to take the Soviets. We estimate probably in the nineties some time they will start having a completely adequate system against low-altitude bombers.

Senator **Warner**. Let me see if I can summarize. The present air defense system that is described in this paper was designed to meet the forces in existence today, basically the B–52 and the FB–111 and any other threat we might have. Is that correct?

Mr. **Hoffmann**. No; we don't think it is very adequate against any low-altitude threat as it stands right now.

Senator **Warner**. Primarily it is a high-altitude system?

Mr. **Hoffmann**. Yes.

Senator **Warner**. With very low capability for low-altitude penetration?

Mr. **Hoffmann**. Yes.

Senator **Warner**. So if the B–1 were in existence today and would be put against this air defense system, would the B–1 clearly survive?

Mr. **Hoffmann**. Yes.

Senator **Warner**. Now, the B–1 is to come into our inventory, if authorized by the Congress, in the late eighties. At that time is it your judgment that the Soviets will have begun an intensive program to modernize their air defense systems, specifically directed toward low-level penetration by a bomber of the B–1 class?

Mr. **Hoffmann**. Yes; they certainly will have begun. It is a question of numbers, very large numbers that they are going to require.

Admiral **Burkhalter**. If I might clarify also: I believe Mr. Hoffmann is saying that it will take large numbers of improved Soviet systems to be able to counter the B–1. We feel the B–1 would be an effective system certainly for a period of time. The Soviets will clearly try to develop systems to counter the B–1. Follow-on U.S. systems would be in order to further counter those systems.

I personally think the B–1 system would be a very good system against what the Soviets have or would contemplate in the intermediate future.

Senator **Warner**. Let's be more specific with those dates. First, as I understand your point, on the qualitative and quantitative program: Qualitatively they probably have the technical capability to develop an air defense system that could interdict the B–1 as we now have it on the drawing boards, that is the modernized upgraded B–1. Quantitatively it is going to put them to an enormous expense to provide for the Soviet Union sufficient units of this air defense system to be a deterrent against the B–1. Is that correct?

Admiral **Burkhalter**. Yes, sir.

Mr. HOFFMANN. We would also have to discuss the ECM game, and I don't think we should go into that now.

Admiral BURKHALTER. We can provide some more details during the closed hearings, sir.

Senator WARNER. Were you tasked as an agency to comment on this strategic program of the President?

Admiral BURKHALTER. No, sir, not to my knowledge. Any questions we get from the Joint Chiefs we provide the answers on, of course, on a daily basis. We could have had some questions from the staff in regard to various alternative programs but as far as a formal request for a formal program review from DIA, I am not aware of that.

Mr. HOFFMANN. I was chairman of the threat group for the intelligence support to the B-1 study that was done last year, and then it was held in abeyance for decision.

Senator WARNER. You did the current analysis for DIA on the B-1 bomber and you chaired the overall intergovernmental group?

Mr. HOFFMANN. It was an intergovernmental threat group.

Admiral BURKHALTER. We participated in many different threat studies, Mr. Chairman.

Senator WARNER. I appreciate that.

If I might return to you, in connection with your duties as chairman and in the preparation of the reports could you be more specific with respect to the timeframe within which the B-1 as now envisioned and before the Congress would be an effective system in relation to the Soviet air defense? What is the timeframe?

Mr. HOFFMANN. I would say it would be an effective system up through the midnineties.

Senator WARNER. That is the midnineties?

Mr. HOFFMANN. Yes.

Senator WARNER. In which event the Soviets will qualitatively and quantitatively have developed an air system which would make it no longer an operationally effective thing?

Mr. HOFFMANN. In addition, as I mentioned before, you have to evaluate the effects of ECM.

Senator WARNER. That is a variant in here which, being classified, we can't get into, but that might prolong the effectiveness beyond the midnineties the capability of the B-1 bomber?

Mr. HOFFMANN. That is right.

Admiral BURKHALTER. Of course, again, with the technological development we have today and some additional countermeasures on our side to help keep that system further effective over into the latter part of the nineties.

CIVIL DEFENSE

Senator WARNER. I am going to close with a few more questions and then I will yield to my colleague, Senator Levin.

Now on civil defense: Historically, the Soviets have put a far greater emphasis on civil defense than the United States.

Would you trace the reasoning for that?

Admiral BURKHALTER. Sir, we believe that the Soviet emphasis on civil defense is a part of their overall philosophy of how to fight a war. They believe that it is necessary to take the steps to protect their military and their civil leaders. It is just a logical thing for them to do and they have devoted considerable effort to that over a number of years.

As we indicated earlier, they have over 100,000 people deployed full time in their civil defense effort. We have seen many efforts by them to provide hardened facilities in order to relocate not only their military, but also their civilian leadership and we think there are probably some efforts to try to harden many of their crucial facilities, their industries, and protect further many of their key workers in these key industries. But it has been a part of the Soviet philosophy that we have observed now for at least the last 10 or 15 years, and it is just part of their way of thinking and their way of life, sir.

VERIFICATION OF SS-20 DEPLOYMENT

Senator WARNER. I have one last question: Back to the SS-20's again, there are discussions now as to how the Western World can come to grips with the growth of the SS-20's short of the physically dismantling of these systems. How can we verify any type of arms limitation agreement with respect to the 20's, say the deployment pattern?

Admiral BURKHALTER. I think to give you a proper answer sir, we really should defer that to the next classified session.

Senator WARNER. Could you say it is a complex question?

Admiral BURKHALTER. Yes, sir, it is a very complex question.

Senator WARNER. Perhaps the most complex in the strategic systems, wouldn't it be?

Admiral BURKHALTER. If it isn't the most, it is among the most, we would agree with you there.

Senator WARNER. Would the threat to Western Europe be at all diminished appreciably if they were just moved out of Eastern Europe?

Admiral BURKHALTER. You mean away from the range of NATO?

Senator WARNER. Yes.

Admiral BURKHALTER. Well, sir, yes, that would, but then of course they can also retarget their ICBM's. The SS-20 is not the only system they can use to hit Western Europe.

Senator WARNER. Mr. Levin?

DEFENSE AGAINST ATB AND B-1

Senator LEVIN. Thank you, Mr. Chairman.

Mr. Hoffmann testified—I think it was Mr. Hoffmann—that it is a tough job to defend against the B-1, an expensive job, too, and I am wondering if it is equally tough or tougher to defend against an ATB.

Mr. HOFFMANN. The Stealth, you mean?

Senator LEVIN. You are familiar with the term ATB?

Mr. HOFFMANN. It is the term of the Stealth.

Senator LEVIN. Is that a classified term?

Mr. HOFFMANN. The Soviets don't have an ATB?

It is much more difficult to defend against the Stealth bomber. The radar equation shows that if you have a small cross section, the range is a function of the fourth root of the cross section.

Senator LEVIN. What you say about the expense of defending against a B-1 is even more expensive against the Stealth bomber?

Admiral **Burkhalter**. Yes, sir.

Senator **Levin**. I think, Admiral, you gave us the assessment of the midnineties—or was that Mr. Hoffmann?

Admiral **Burkhalter**. Yes, sir, and I added to that of course that there could well be technological developments on our side, countermeasures that could give us even further protection on into the decade.

Senator **Levin**. Doesn't the assumption or assessment of the midnineties assume some new advanced countermeasures?

Admiral **Burkhalter**. I am not sure it does, sir, but we can give you much more detail during the classified session. Of course a lot of that depends upon the effort of the Soviets. It will take an enormous effort on their part to be able to counter the B–1.

Senator **Levin**. Are you saying the answer to that question is a classified answer?

Admiral **Burkhalter**. No; I didn't mean to imply that.

Senator **Levin**. Will you answer my question again and see if we can get an unclassified answer to it? The question is whether or not the assessment that the B–1's will be good as penetrators to the midnineties, whether that is based on an assessment of a new advanced ECM?

Mr. **Hoffmann**. Partially. It is also as I mentioned——

Senator **Levin**. Partially what?

Mr. **Hoffmann**. Partially dependent upon ECM.

Senator **Levin**. Is that advanced ECM?

Admiral **Burkhalter**. I think the answer we would like to give you——

Senator **Levin**. It is very difficult. I don't know whether to look at you but I think Mr. Hoffmann gave us the first answer, or at least the one I heard, that the B–1 will be a good penetrator until the midnineties. My question is, does that assume advanced ECM for that answer?

Mr. **Hoffmann**. Not completely, no.

Senator **Levin**. Does it partly assume advanced ECM?

Mr. **Hoffmann**. Partially.

Senator **Levin**. What part?

Mr. **Hoffmann**. I would rather not discuss that now.

Senator **Levin**. That is the part you can't testify to in open session. Would you agree, Admiral, with the answer of Mr. Hoffmann that the midnineties date partly assumes some advanced ECM?

Admiral **Burkhalter**. Yes, sir, but if I might give you a further answer, Mr. Levin, an amplified answer. As I said earlier, there could well be additional ECM and other countermeasure improvements that could add to the capabilities of the penetrability of that system on into the latter part of the nineties. We can give you a more detailed answer on that in the closed session.

Senator **Levin**. I understand your testimony, but before we get to the latter part of the nineties, I want to get to the midnineties, because I believe that it assumes in part advanced ECM. Mr. Hoffmann apparently says that that is true and partly assumes advanced ECM. You want to talk about the late nineties, where we might be able to get to with further advanced ECM, but I want to go to the answer about the midnineties.

Admiral BURKHALTER. Could I ask Mr. McCrery, my colleague on the right, to comment on that?

Mr. McCRERY. I think in a session like this, which is a rather general one, we have to be careful about the use of terms and the definition of terms such as advanced ECM. I think when Mr. Hoffmann commented he no doubt was thinking in terms of ECM that we would now call advanced ECM being used. However, if you mean in order to be operationally successful into the midnineties would the United States have to develop some far out advanced ECM not presently conceived or not presently planned, I think that our answer would be no.

Senator LEVIN. How about advanced ECM that is presently conceived?

Mr. McCRERY. Well, while not wishing to speak for the Defense Department, but here representing only the intelligence portion of the Defense Department, I wouldn't want to comment about what they would include on their airplane, but I would assume that an aircraft as advanced as the B–1 would certainly include as part of its systems complement what we would now consider relatively advanced ECM and other countermeasure techniques.

Senator LEVIN. Which we have now conceived?

Mr. McCRERY. Yes.

Senator LEVIN. And you are saying that further advancements in that which we might be able to conceive of or now conceive it could take it even further?

Mr. McCRERY. Yes, sir, I believe that is what the admiral was speaking of earlier on in his testimony when he said that it certainly is conceivable and probable that the effectiveness date could be pushed beyond the midnineties.

Senator LEVIN. Has there been a difference of opinion as to whether or not presently conceived provable ECM can carry us into the midnineties? Has there been a difference of opinion on that issue?

Mr. McCRERY. I don't think there has. It certainly is a very complex question and whenever you have a complex question, you have some variance in the different analysts' assessments. But I think if you are looking for a bottom line, I think the answer is that there is not a substantial difference.

Senator LEVIN. There is a consensus on that question?

Mr. McCRERY. Well, I am not sure we have been involved to a depth required to really answer that with a concrete statement.

Senator LEVIN. Just yesterday, I heard that the Soviet strategic air defense will be reaching its full deployment in 1987. Do you agree with that assessment?

Mr. HOFFMANN. What I am saying is what I originally said, that it was a numbers game and there are indications that the Soviets now are going to start to deploy new equipment. If they deploy the numbers of equivalent aircraft and SAM-type systems that they have now, we estimate it will be in the nineties to get to those kinds of numbers. So it is going to be a gradual deteriorating situation.

[Additional information follows:]

FULL DEPLOYMENT OF SOVIET AIR DEFENSES

Senator LEVIN. Just yesterday I heard that the strategic air defense will be reaching its full deployment in 1987. Do you agree with that assessment? That

assessment was made by Dr. Perry last April, so presumably there is information since last April.

ANSWER. While the background leading to the statement made by Dr. Perry is not available to us, we would disagree with the statement as presented. Although the Soviets are developing advanced technological systems with considerable one-on-one capabilities, full Soviet defense against combined attacks of U.S. aerodynamic forces remains unlikely in this decade.

Senator LEVIN. That assessment was made by Dr. Perry last April, so presumably there is information since last April. That is what you are saying, Mr. Hoffmann? That is April 1980.

Mr. HOFFMANN. I am not aware of where Dr. Perry came up with a number relative to this. How do you define that as being the deployment?

Admiral BURKHALTER. If we might, I would like to take that question and give you a better answer for the record.

Senator LEVIN. OK.

Admiral BURKHALTER. I would like to take it for the record and provide you with a record answer to make sure that we give you the best information we have.

Senator LEVIN. If I have a couple of more minutes. I don't want to monopolize your time. I am not on the subcommittee.

Senator WARNER. We welcome you and we will give you what additional time is necessary. I would like to adjourn in about 6 or 8 minutes to resume the classified hearings in another room.

Senator LEVIN. Is is generally true that our ECM has lagged behind Soviet air defense by a couple of years?

Admiral BURKHALTER. I would like again to turn to one of our experts because that is an area in which I do not have a good expertise.

Mr. HOFFMANN. I cannot talk about that within this session.

SOVIET VERSUS U.S. MODERNIZATION

Senator LEVIN. You have indicated, Admiral, the modernization of the Soviet strategic forces this morning, and I would like to ask you a question about the modernization of our strategic forces during the last decade. Would you agree that during this period of time, we have modernized our forces in the following way: One, with the Trident I missile?

Admiral BURKHALTER. Yes.

Senator LEVIN. Two, with the Trident sub?

Admiral BURKHALTER. The Trident sub which is yet to deploy. The first one is commissioned this coming Saturday.

Senator LEVIN. If I ask you this question next Monday, your answer would be "yes" to that?

Admiral BURKHALTER. We still have the deployment.

Senator LEVIN. How about air launch? We are close to the deployment of those, aren't we?

Admiral BURKHALTER. Yes; I am not as current on some of those systems as the Soviet systems but that system I believe will be in operation in the next year or two.

Senator LEVIN. How about improvements to the B-52's?

Admiral BURKHALTER. Again, sir, you are getting beyond my area of expertise I think there have been some improvements but this is a pretty old airplane.

Senator LEVIN. How about avionics for the B-52?

Admiral BURKHALTER. They have been improved, and whether improved in the last decade or not, I am not at liberty to say because I am not——

Senator LEVIN. How about the Mark 12A?

Admiral BURKHALTER. That has been incorporated in the Minuteman, and again I can't give you the precise dates on that system.

Senator LEVIN. Well, you don't know whether they have been deployed within the last decade or not?

Admiral BURKHALTER. Yes, sir, I have, but to give you the precise dates—but if I might give you, do you have any other question?

Senator LEVIN. You asked the chairman for time to answer some other questions. How about command and control in the Minuteman? Do you know whether that has been improved?

Admiral BURKHALTER. The command and control has not been improved, not much during the past decade. There are plans to do that, but if I could just give you one statement which is somewhat germane, you compare those improvements to what the Soviets have done and the Soviets have deployed significantly more systems than we feel——

Senator LEVIN. I don't doubt that but I want a comparison. I agree with you, if you look at both sides of the story, they made greater advances than we have, and I want to make sure we are looking at both sides of it. It is just not one-sided, a 99-page assessment of their strength without looking at our strength.

Admiral BURKHALTER. Yes, sir.

SOVIET DEFENSE EXPENDITURES

Senator LEVIN. The other question is you indicated this morning, I guess after some prodding by our chairman, that you believed they have spent $300 billion more in strategic weaponry than we have over the last decade, and I am wondering if you could tell us what they spent and what we have spent which resulted in that figure, that bottom line figure.

Have they spent $900 billion and we spent $600 billion, and that nets out at $300 billion, or how did you arrive at that figure?

Admiral BURKHALTER. Sir, we don't have detailed numbers here. Our statement was about the difference in total military investment. Should the number we gave you be off, I will correct the record.

Senator LEVIN. That will be fine, and I thank you and I thank the chairman for allowing me to participate.

Mr. Hoffmann, if you would also, or Admiral, could give us for the record what has taken place since April of last year which would change the assessment of Dr. Perry? Again, is his assessment of April 30 of last year, was that the Soviet strategic air defense, the new generation will be reaching its full deployment in 1987. If you could provide for the record what has happened since then, or indicate that maybe nothing has happened and you don't agree with the assessment that would be most helpful.

Admiral BURKHALTER. Yes, sir; we will be more than happy to do that, Senator.

Senator WARNER. I want to clarify that $300 billion figure. You have indicated that that was a development in the strategic area. Are you quite sure?

Admiral **Burkhalter**. I believe that is overall military investment.

Senator **Warner**. It is my understanding it is an overall Defense figure.

Admiral **Burkhalter**. We will be glad to give you that.

[The information follows:]

NATO and Warsaw Pact Defense Expenditures

Senator **Levin**. "How much has been spent in the past decade by the US/NATO and Soviet Union/Warsaw Pact on defense—all systems, not just strategic?"

Answer. A comparison of the overall levels of defense activities of the NATO and Warsaw Pact alliances is possible by valuing their military programs in US dollars. For the 1971–80 period, the estimated cumulative defense outlays for NATO nations amounted to the equivalent of 2,100–2,500 billion US dollars (1980 prices). In contrast, the estimated cumulative dollar costs of Warsaw Pact military programs amounted to $1,800–2,200 billion (1980 prices).

These dollar figures include the cost of military investment, operating, and research and development programs for all branches of the armed forces.

The range for the NATO costs reflects the uncertainty regarding the calculation of dollar equivalents for non-US NATO defense outlays. The range for the Warsaw Pact data is due to uncertainty about the estimated quantities and US prices used to develop the appropriate dollar costs.

Senator **Levin**. Well, I misunderstood your question, I wasn't here and my information was wrong. I am sorry.

Senator **Warner**. I made a footnote here to correct that. I think maybe inadvertently in the direct testimony the figure was used exclusively for strategic as a delta and now that is verified as being accurate. But I think the reality is that the figure relates to the overall expenditures of Defense for all systems and not just strategic.

Admiral **Burkhalter**. I would like to provide you with a clarifying number that we could give you, sir, both for the record for this session, and if there is any more detail for the closed session we can do that.

Senator **Levin**. In that case I would ask a different question. If you would also give us for the record the total expenditures of the Warsaw Pact and NATO during that time, and if you would give us the exchange rates that you are using when you compare those figures.

Thank you.

Senator **Warner**. We will adjourn now and resume in S. 407. Only those persons cleared for executive session may appear.

[Whereupon, at 10:25 a.m. the committee was adjourned subject to the call of the Chair.]

STRATEGIC FORCE MODERNIZATION PROGRAMS

TUESDAY, OCTOBER 27, 1981

U.S. SENATE,
SUBCOMMITTEE ON STRATEGIC AND
THEATER NUCLEAR FORCES,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

STRATEGIC POLICY AND OPERATIONAL CONCEPTS

The subcommittee met in open session pursuant to notice at 8:36 a.m., room 212, Russell Senate Office Building, Senator John W. Warner, chairman, presiding.

Present: Senators Warner, Thurmond, Quayle, Nunn, Exon, and Levin.

Staff present: Rhett B. Dawson, staff director and chief counsel; Paul C. Besozzi, minority counsel; Brenda K. Hudson, assistant chief clerk; Louis W. Arny, Frank J. Gaffney, Ronald F. Lehman, José E. Martinez, and E. George Riedel, professional staff members.

Also present: Buzz Hefti, assistant to Senator Warner; Jim Dykstra, assistant to Senator Cohen; Bill Furniss, assistant to Senator Quayle; Arnold Punaro, assistant to Senator Nunn; Greg Pallas, assistant to Senator Exon; and Peter Lennon, assistant to Senator Levin.

OPENING STATEMENT BY SENATOR JOHN W. WARNER, CHAIRMAN

Senator WARNER. We begin this morning the second in a series of hearings on the President's submission of his plan for the modernization of America's strategic nuclear forces. He described a five-part package which addressed each leg of the strategic Triad, civil and air defense, and the command, control, and communications systems, C^3, which are the nerves of our strategic deterrent.

The President spoke first of revitalizing our bomber forces. His proposal is a two-bomber program which would have the U.S. Air Force procure a force of 100 modified B-1 bombers while development continues on an advanced technology bomber.

The two-bomber program provides an improved near-term capability and a hedge against difficulties with the so-called Stealth technology. As such, the President's two-bomber program represents a major commitment to enhancing the air-breathing leg of the nuclear Triad.

Nevertheless, the decision to go ahead with the B-1 bomber more than 4 years after that aircraft had been canceled by a previous President has encountered much opposition. Critics doubt the military effectiveness of the B-1 bomber and fear that the cost of the two-bomber program will weaken other programs.

In the days and weeks ahead this subcommittee will devote much of its time to evaluating America's strategic bomber needs in light of defense budgets which will be less than had been anticipated last March.

The President's second initiative was the approval of the Trident II/D-5 missile and the decision to deploy nuclear armed sea-launched cruise missiles.

This subcommittee welcomes the decision on the D-5. Last year the Senate Armed Services Committee added funding to accelerate the Trident II missile and expressed strong support for the D-5 version. It has been the committee view that the *Ohio* class submarines should be equipped with the optimal missile in terms of accuracy, range, and payload, even at the sacrifice of an earlier initial operational capability, IOC.

The Reagan D-5 program continues, I believe, along these lines.

In light of the uncertain future basing options for the MX missile, the subcommittee will undoubtedly wish to pay special attention to the D-5 program to insure that the program is a success. We will also examine the administration's decisions to pursue a less vigorous Trident submarine program and its new emphasis on nuclear, sea-launched cruise missiles.

Perhaps no part of the President's strategic package is more controversial than his proposals for basing the new MX missile. The President has rejected, to the surprise of many, the multiple protective structure basing concept endorsed by the two previous administrations and by the Air Force. I should add that such deceptive basing of mobile missiles was also endorsed by the Congress and supported by the Senate and House Armed Services Committees.

The President rejected the so-called shell game because, in his words, "No matter how many shelters we might build, the Soviets can build more missiles, more quickly and just as cheaply."

The President proposes that we temporarily deploy the MX missile in superhardened, existing silos while we search for a more survivable, long-term basing mode.

The President has focused this search on deep underground basing, ballistic missile defense and a continuous patrol aircraft. The subcommittee will examine these proposals carefully because of the high cost of the MX program, its importance and the uncertainty which surrounds the selection of an ultimate basing mode.

The President's decision to give greater priority to command, control, and communications has found many supporters in this subcommittee, which, this very year, was responsible for the largest congressionally-mandated C^3 initiative ever. In fact, the programs we have added this year are the very ones to be found at the heart of the President's C^3 package.

Nevertheless, the President's proposal goes far beyond the level of funding which had thus far been supported for strategic communications. Because of the high cost associated with these systems, especially close congressional scrutiny will be necessary to insure that we are not over-reacting to what has been a serious problem.

Strategic defense has undoubtedly been neglected by the United States in recent years. The Reagan proposals for air and civil defense express a renewed interest in these important aspects of our strategic deterrent. Still, the precise requirements of our Nation for air and civil defense have not been carefully explained and the Congress will want to know more of the details.

In short, the President has submitted to the Congress a rather comprehensive strategic modernization package and it is now up to us, and especially to the members of this subcommittee, to work toward improving America's strategic nuclear forces in light of the President's recommendation.

Toward that end we have taken upon ourselves a very vigorous program of hearings designed to identify the strengths and weaknesses of our strategic deterrent forces and to correct them.

Yesterday we began these hearings by examining with U.S. intelligence agencies the nuclear forces of the Soviet Union.

Today we will focus on the President's response to the Soviet Union's strategic nuclear buildup.

We have with us the Under Secretary of Defense for Policy, Dr. Fred Ikle, along with supporting witnesses from the Office of the Under Secretary for Research and Engineering.

In this hearing we will seek to illuminate the strategic doctrines and policies of the Reagan administration and the operational concepts behind the President's strategic modernization package.

The members of this subcommittee are well aware that changes in doctrine, definitions, assumptions and operational concepts can play a major role in determining the strategic balance. Sound doctrine will strengthen our deterrent; false assumptions will weaken it. In either case, however, our strategic policy is the foundation which determines the effectiveness of our strategic forces.

Testimony today will reveal, hopefully, a solid foundation for the President's strategic force recommendations.

We will go right to you, Dr. Ikle.

STATEMENT OF HON. FRED C. IKLE, UNDER SECRETARY OF DEFENSE FOR POLICY, ACCOMPANIED BY HON. JAMES P. WADE, JR., PRINCIPAL DEPUTY UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING; AND T. K. JONES, DEPUTY UNDER SECRETARY OF DEFENSE FOR STRATEGIC AND THEATER NUCLEAR FORCES

Dr. IKLE. Senator Warner, I am pleased to appear before you to discuss the strategic modernization program of the Reagan administration. I propose to make a few, very brief opening remarks to set the context and then to respond to your questions.

You have been briefed on the elements of this program by the Secretary of Defense and you will receive more detailed information in subsequent sessions in these hearings; hence, I shall focus on the relationship between President Reagan's strategic modernization program and our nuclear strategy, as well as the role of the program in the broader defense policy.

What are the objectives of nuclear strategy? I think, to begin with, we must avoid facile slogans about so-called war-fighting strategy versus pure deterrence.

U.S. policy governing nuclear weapons has long emphasized deterrence—in the sense of stressing the prevention of war and particularly the prevention of nuclear attack through the threat of retaliation. This has been true almost from the beginning of the nuclear era—to be precise, since 1948.

The notion of using nuclear weapons to obtain a favorable outcome on the battlefield or in the military campaign has not been absent, however, in U.S. military thinking; but it has always been secondary, even in the early decades of the nuclear era. But the so-called retaliation that is meant to deter aggression—or deter massive conventional attack—particularly in Europe, must serve a purpose beyond being a wanton act of revenge.

In order to be credible, the response must make sense in terms of the national interest. This aspect is the fulcrum of the problem of the nuclear strategy. Nearly all of the strategic and philosophic questions revolve around this problem. In a sense, they are like two conflicting poles, two extremes, that keep pulling and hauling through all of our plans for nuclear strategy.

One extreme is the idea that nuclear strategy and nuclear weapons should merely be a kind of a doomsday machine, an arsenal capable of nothing more than a single act of total revenge. This idea has found expression in the so-called mutual assured destruction [MAD] doctrine.

At the other extreme is the idea that nuclear weapons should be simply an extension of ordinary military ordnance, but somehow clearly and safely limited, to enable their use as if governed by the Marquis of Queensbury rules.

The strategic policy of President Reagan avoids both of these extremes. It strikes the proper balance between the need for a massive deterrent threat and the need for controlled, nuclear response.

Mr. Chairman, this balance, this position of moderation between two extremes, goes a long way to explain the rationale and purpose of all of the components of President Reagan's strategic program. But before taking questions on specific weapon systems, I would like to introduce two more broad objectives that are nearly equally as important as this balanced deterrent objective.

The second objective is that we must seek to prevent nuclear war under all circumstances from all causes, whether it is a cold, calculated, deliberate attack planned long in advance, whether it is a rash act in the peak of a crisis, or whether it is the initiation of nuclear weapons used by accident or by some other malfunction. This goal is furthered by the planned improvements in command and control, and in increased weapons survivability, which taken together will contribute substantially to making our world a safer place in which to live.

The third objective that must be met is to stop the Soviet temptation to gain a long-term advantage by continuing its massive strategic buildup. It is precisely this objective which has been neglected in the last decade or two and has led to the current massive imbalance between certain Soviet strategic force programs and our own.

The Reagan strategic program is designed to be resilient to a variety of possible Soviet responses. It drives the Russians in a great many different directions if they want to overtake us.

Let me briefly illustrate how these three principles, Senator Warner, are reflected in the components of the Reagan strategic program, and then I would like to respond to your questions.

Our emphasis on command, control, and communication systems is, of course, designed to make the instruments, the offensive weapon systems, capable of being governed by national policy. National policy cannot be preprogramed entirely before the outbreak of an attack, because it must respond to the realities of an attack however it might arise.

Our multiplicity of strategic offensive arms, are so-called Triad, complicates the Soviet response in trying to outdo us in their continuing buildup. Look at the subcomponents. The land-based MX missile has three different options for long-term basing plus the short-term interim approach. If you put yourself for a moment in the shoes of a Soviet planner, you will see that his attempt to overtake us is enormously complicated. He has to divide his research programs in at least three directions: Trying to overcome what we might do through ballistic missile defense of our MX; trying to overcome what we might do through deep underground basing; and finally, trying to defeat what we might accomplish through a permanent airborne basing of the MX.

Likewise, in our sea-based deterrent, we are two-pronged in contrast to the program of the prior administration. We have the ballistic missiles, the primary sea-based deterrent, and we have the addition of the cruise missiles. These, of course, would each require entirely different forms of defenses on the part of the Soviet Union.

Last, the bomber, and particularly the B–1B, which will safely be available in this decade—and about which we know a great deal more, obviously, than the advanced bomber—is one of the most flexible instruments in our arsenal. It can respond to early signals of a crisis by being dispersed. It could at the request of our allied forces be brought onto their territory and dispersed there, based on rather short-term planning. It can be used in a conventional war. It can demonstrate our stages of alert in a deliberate fashion to send signals to the enemy.

It is because of that great flexibility, its responsiveness, its security in times of crisis, its ability to be alerted, deployed rapidly upon warning or a long period of time if so prepared, that the B–1 is of particular significance.

It is all of these programs as they interact and hang together, which I think our present strategic program does, which gives it particular strength. It puts us in a position to look forward for the next couple of decades, based on this program, to being able to adjust to what the Soviets are doing and, hopefully, being able to bring them around to real and genuine arms control reductions, the kind of reductions that President Reagan envisages and seeks to obtain.

I propose to conclude my opening remarks and to be responsive to all of your questions.

Senator WARNER. Does Dr. Wade desire to make any opening statement?

Dr. WADE. No, sir.

Senator WARNER. Let us take off on your last comment, Secretary Ikle, and that is the President's desire to have genuine arms control reductions.

Has this program been designed in such a way that part or parts of it could be stopped at some critical point in a future arms negotiation?

Dr. **Ikle**. Indeed, various parts of it could be reduced in terms of numbers. The programs for weapon systems could be cut back, or if arms control reduction talks proceeded further, they could be eliminated entirely.

More likely we would attempt to make these reductions in a balanced fashion; that is to say, we would not try in arms control negotiations to eliminate one leg of the Triad but rather to cut back in a more balanced way.

Senator **Warner**. Perhaps you are not at liberty to give specifics, but I would like to have your assurance. As the President's program is put together, have those, such as yourself, who have a responsibility in the arms control area sat down and looked at it as a matrix and determined, if we go forward with the totality of the program, namely, the Congress authorizes and appropriates the funds requested, here are the components and here is a schedule by which we would hope to make certain reductions? Am I correct in that? In other words, was there arms control planning in the formulation of this package?

Dr. **Ikle**. The driving thought here in shaping the package so that it can serve the arms reduction objective of President Reagan was to be able to be resilient to any Soviet attempt to gain advantages and overtake us. We have had the experience in the last 20 years that if we signal that we are leveling off, we are restraining ourselves, in the hope that the Soviets would follow us, that hope remains unrequited. We will be disappointed.

But, on the other hand, given this is an integrated package that hangs together particularly for the command, control, and communications systems which will keep all parts of the offensive weaponry under national control, to serve the national objectives, it is possible to take deep cuts in several of these systems, or in combinations of the systems, in response to compensating cuts on the Soviet side.

Senator **Warner**. A short answer is that the arms control individuals did participate in the formulation of this package?

Dr. **Ikle**. Yes.

There is one more thought I should express here that is important: As Secretary Weinberger has mentioned some time ago, it is not our objective, the objective of this administration to mirror image Soviet systems by trying to match them exactly, numbers for numbers and systems for systems in a symmetric fashion.

This drive toward artificial symmetry really does not serve the purpose of stability and deterrence. It has been one of the unfortunate byproducts of the SALT process. We want to break away from that. Indeed, we have broken away from that.

The components we have put together were not designed to be a mirror image of what the Russians have been doing.

Senator **Warner**. Perhaps at this point in the record you can put in a recap of what the President's statements have said recently in respect to the timetable for any arms control talks, both theater nuclear as well as intercontinental?

Dr. **Ikle**. We will be pleased to put that in the record.

Senator **Warner**. Why don't you summarize it, quickly?

Dr. **Ikle**. Essentially, there is a firm timetable for the long-range theater nuclear weapons discussions. By the end of November we will begin our talks in Geneva with the Soviet Union and we have made extensive preparations with our allies and here to arrive at a position that is supportive of the allied decision of 1979.

On the Strategic Arms Reduction Talks, or START as we begin to call it, no particular date has been set yet, but it would be my expectation that sometime next year these subjects will be taken up in negotiations as well.

Senator WARNER. What impact, if any, on the first round of talks—theater nuclear—will the recent outbreaks and demonstrations in Europe have?

Dr. IKLE. These demonstrations show two things: One, A latent and deep anxiety of the people in Europe, and maybe in some way it is something shared by all people who are informed, about the dangers of nuclear war and genuine fear and genuine concern about maintaining the peace.

Second, they show the very skillful manipulation of public opinion by an orchestrated Soviet campaign, with funds that can be traced back to Moscow through many subsidiaries and organizations and a very skillful way of agitating and driving public opinion in their hope to drive a wedge between our European allies and the United States.

In these talks, obviously, we will be conscious of and responsive to the genuine concern about making every effort to maintain the peace. We want to maintain an adequate deterrent posture without having to go to a large-scale nuclear buildup to respond to the Soviet threat, and to this end we will try to induce the Soviets to cut back on their threat in their programs.

But we will not be set adrift, I hope, by the Soviet propaganda campaign.

Senator WARNER. Did you have an opportunity to see the article in today's Washington Post in respect to the program for the enhancement of the existing systems there, namely, the artillery and so forth?

Dr. IKLE. Yes, I did.

Senator WARNER. This is by no means a substitute for going ahead with the main effort?

Mr. IKLE. Not at all. The artillery modernization has quite a different purpose.

Senator WARNER. They have been long planned and there is just an orderly sequential upgrading of that effort?

Dr. IKLE. Precisely.

Senator WARNER. Recent press accounts have suggested a major policy element in President Reagan's strategic modernization program, with the emphasis on being able to conduct an enduring nuclear war, a war that will last perhaps days, weeks, or even months.

Endurance, according to this concept, would be more than the ability of weapon systems and C^3 to ride out an initial attack; it involves the ability of the United States to reconstitute its forces, again, perhaps, over long periods, puncuated by nuclear attack.

Is there an administration policy which gives greater priority than in past years to scenarios in which nuclear exchanges continue for days, weeks, or even months?

Dr. IKLE. There is, Senator, greater emphasis on obtaining enduring systems; that is to say, offensive systems—and command systems to complement them—that could endure after an initial nuclear attack.

We put a great deal of stress on this and we think this is a very important part of our broader and balanced deterrence posture.

The reasoning is that we want to deny Soviet planners who may design an attack, either for a peak crisis or for an attack out of the blue, every possible avenue of thinking whereby they could expect to obtain an advantage by initiating nuclear war.

One great concern by a number of thoughtful analysts who have followed Soviet programs is that they might plan on a massive, quick, initial surprise attack which would to a large extent disarm us by destroying some of our more vulnerable systems. This could leave the United States with such a disorganized capability of some residual offensive arms and a largely disabled command, control and communications system that there could be no effective U.S. response. At that point, any further response could be deterred by the remaining Soviet weaponry.

There is concern that this kind of planning might be combined with the utilization of the rather far advanced and extensive Soviet civil defense system, permitting the evacuation of most of their urban populations so that they could either deter, or if they can't really deter and disarm the retaliatory strike, survive part of it, and then recover as the only nuclear power on Earth and dominate the outcome of such a horrible war.

It is in order to foreclose that thinking, however important it may be in Soviet plans—and there are indications it has gained some importance over the last 10 or 20 years—that we want enduring survivable systems. In this way we can close the last door to any halfway rational Soviet plan for initiating nuclear war.

Senator **Warner**. Mr. Ikle, you and I worked together for many, many years and I want to stress this greater priority in the current administration, and not the partisan standpoint, but it is my understanding that when President Reagan came in he directed a greater priority on this defensive system. Am I correct in that?

Dr. **Ikle**. On defensive systems, you mean?

Senator **Warner**. On the endurance concept.

Dr. **Ikle**. Yes; President Reagan has made this a major part of the modernization program. It is entirely in harmony and explicitly endorsed, I believe, by President Reagan, and reflects his expression and thinking about nuclear war and how to deter it. These are things that Ronald Reagan has been saying for many years.

Senator **Warner**. May I call on your colleague, Mr. Wade, because I know we have sat across the table for 3 years on this subject.

Do you have any further observations on that point?

Dr. **Wade**. I would add one point, Senator, and that is that, as Dr. Ikle indicated, it is a question of making sure your forces are effective throughout any type of campaign the Soviets could plan for.

Certainly, sustainability in this regard is as important as the all-out spasm attack, which most people believe would occur.

The objective here is to present to the Soviets a posture such that any scenario they might realistically plan would not be to their advantage and thereby we would deter war.

Senator WARNER. What is the concept of employment of the different components of American nuclear forces during a nuclear war of long duration?

Dr. IKLE. This is, of course, an immensely difficult area, given the enormous scope and destructiveness of nuclear weapon effects. It is contingent upon the amount of damage that you postulate.

At one extreme, what we want to deter—and this was alluded to by Dr. Wade's observation just now—is a limited use of nuclear weapons to gain some tactical or theater advantage for the Soviet Union which would at the same time disable, or practically disable, our command, control, and communications systems so that we could no longer respond in a rational way. Therefore the Soviets might calculate that we would not respond at all.

At the other extreme, we want a system, a residual offensive capability, a secure reserve element of the strategic deterrent force, that would survive under all conceivable circumstances of attack, and would survive in combination with the command and control system such that the national command authority can use these residual instruments of offensive capability in order to serve the national policy at that time.

Dr. Wade may want to elaborate further on the immense difficulties, of course, that are associated with trying to design systems that can meet these objectives.

Dr. WADE. One new aspect in the design of our systems is mobility. We recognize that, both over the near and far term, that if you have a weapon system that is located at a fixed point on the ground and the potential adversary knows that point, he can destroy that system.

It all depends on how much, in the sense of resources, he wants to employ against that target. So, mobility and deception are important. That leads to the importance and viability, for example, of the bomber force. The bomber as a delivery platform can be used more than one time in the context of an enduring war; it is a delivery platform that can carry and employ an initial set of weapons, return and reload and be used again.

It is planning in this regard that sustains your forces and a serious approach to it is called for.

Senator WARNER. Is the administration's interest in deep underground basing for ICBM's related to a need for long-enduring retaliatory weapons?

Dr. IKLE. That kind of basing could indeed be a prime component of the secure strategic reserve force. It is far more likely to be suitable for a response capability that would be activated after quite some period of time.

Senator WARNER. Let us turn to the B–1 bomber, which is an integral part of this program, one which will receive a great deal of attention here in the Senate. Sometimes the proposed B–1 is referred to as a cruise-missile truck. Debate is underway over the ability of the bomber to penetrate Soviet air defenses in the 1990's.

The B–1 is strictly described as an aircraft which will penetrate in the near term and then be deployed as a standoff cruise-missile carrier in the 1990's. Nevertheless, the administration has requested additional funding to make the B–1 bomber into a cruise-missile carrier at the earliest possible date.

According to sources, the B-1 would be used as a cruise-missile truck, launching several loads of cruise missiles before finally penetrating Soviet air space itself. Administration officials have even suggested that many B-1 bombers during a nuclear attack on the Soviet Union would not be launched against the Soviet Union but, rather, would be sent to secret dispersal bases to load up with cruise missiles to be transported and launched at a later time.

How does the Defense Department contemplate deploying this bomber in view of those alleged statements?

Dr. IKLE. Let me make three points relating to the importance of the B-1 program, and Dr. Wade will further respond to your question, Senator.

Just so we don't lose sight of the great importance of the B-1 program, let me recapitulate the three primary reasons for it.

First, unlike the B-52, the B-1 is capable of rapid takeoff from its bases so that it has a much better chance of escaping from surprise attack, hence its vulnerability to the surprise attack is vastly reduced.

Senator WARNER. What is the factor there? Has that been calculated with some precision over and above the B-1 versus the B-52?

Dr. IKLE. That is right. Dr. Wade may want to say something specific on that.

Dr. WADE. Senator Warner, I think we should discuss the specific numbers in closed hearing.

Senator WARNER. So you haven't publicly said it is a 2-to-1 ratio or——

Dr. IKLE. It is much enhanced, by a very significant factor.

Dr. WADE. Based on our calculations, a far larger number of B-1's would survive than B-52's.

Senator WARNER. I was thinking of the time itself, rather than trying to extrapolate the number of bombers surviving. Could it take off in half the time, or what is public on that? We have to get these facts out and this is going to be difficult.

Dr. IKLE. We will try to clear, for the record, whatever can be said in a sanitized version, and be as specific as possible on that point.

[The information follows:]

B-52 AND B-1 SURVIVABILITY

The launch area survivability of the B-1 is better than the B-52 in three areas. Total survivability is then a function of these three consisting of: (a) nuclear hardening, such as blast, gust, thermal and electromagnetic pulse (EMP), (b) faster base escape, and (c) better dispersal.

Regarding these three areas: (a) The B-1 was designed nuclear hard and the B-52 was not. We are attemping to increase the nuclear hardening of the B-52, but the confidence level will never approach that of a B-1 that was designed inherently hard. (b) The B-1 is a faster and higher thrust aircraft and can attain more separation from an airfield potentially under attack than a B-52. Numbers on the order of 7 to 14 miles increased separation distance are attainable within the first five to ten minutes. (c) The B-1 can be dispersed to far more airfields due to runway width. The B-52 has landing gear, called outriggers, at the wing tips; this requires 150 foot wide runways. The B-1, which uses a tricycle landing gear, can operate from much narrower fields. This very substantially increases the number of potential dispersal locations.

The increased survivability is, accordingly, a result of combining these three aspects with the B-1 far ahead of the B-52 due to design aspects.

Senator WARNER. That is a point that is readily comprehensive by laypeople and I think it is important that we get it out.

Dr. **Ikle.** Of course, it is a cardinal characteristic or advantage of the B–1 over the alternative of just continuing with the B–52.

Senator **Warner.** I am familiar with the analysis on this point and I just want to know what we can put on the record.

Dr. **Ikle.** We will try to fill it in here.

Senator **Warner.** Now, you gave one point.

Dr. **Ikle.** The second point is penetration. While it is expected that improvements in Soviet air defenses will eventually make it difficult or impossible for the B–1 to penetrate, it is very important from our point of view to force the Soviets early on to make these improvements if they want to do it.

If the B–1 program forces the Soviet Union to make these improvements in their defenses, this is an advantage for us. Why is that? Because it forces an enormous diversion of Soviet defense resources into a defensive system which can later on be overcome by the advanced technology bomber. In that sense, the penetration capability of the B–1, even if it should be temporary, is not wasted. It deprives the Soviet Union of assets that they could otherwise use for more dangerous offensive systems.

Senator **Warner.** Would you call that economic warfare then?

Dr. **Ikle.** I would call it part of the United States-Soviet strategic competition and it fits in the larger sense into our arms control bargaining strategy, trying to induce them to sit down with us and settle on reductions.

Senator **Warner.** Is there any ratio there that is public? In other words, the cost of the B–1 program vice what it will cost them to make their necessary deterrent system?

Dr. **Ikle.** Again, we will try to submit this for the record.

[The information follows:]

B–1 AND SOVIET AIR DEFENSES

You can make some general associations of Soviet air defenses with B–1's and other 1980's U.S. bomber force improvements, but you cannot calculate meaningful cost ratios because simply adding to air defenses doesn't counter B–1's as neatly as adding Soviet ICBM warheads would have countered MPS shelters. To try to come to grips with the B–1, the Soviets would have to: add more AWACS; deploy more high-quality interceptors and SAMs; and improve their air defense ground environment—and make it all work in the context of a nuclear war. We think the Soviets would never get the whole system to be 100 percent effective against the B–1, and even the process of making it partially effective may cost two or three times what we will put into the B–1 program.

Dr. **Wade.** I think the key point is that it drives the Soviets in the near term into a mode which is really not harmful to us in a direct sense. In other words, we would like to drive the Soviets toward spending their own defense resources. We have leverage there that can be as high as 10 to 1, if we look at the total bomber program.

Continuing in that regard, I think it is sound as far as the policy of this country is concerned.

Dr. **Ikle.** To counter these programs, the Soviets would have to spend 10 times as much as we do on some of these programs.

Senator **Warner.** Have you considered the reverse, that they might try and do something with their Backfire? I know in classified areas it is talked about that they are considering that, and they might force us to do the same thing in that situation.

Dr. **Ikle.** If we wanted to get the same degree of defensive capability that the Soviet Union is trying to obtain with their air defenses, then indeed we would have similar problems; but the objectives of the air defense components of our strategic program are more limited. They relate to the ability to have some enduring systems, and to the survival of our offensive systems.

The third point is the flexibility of the B–1. It is possible to put it on various stages of alert and thus respond during crises in the way it can stabilize the situation.

Senator **Warner.** That is the conventional role, is it?

Dr. **Ikle.** The conventional role is just one dimension. The nuclear capability of the B–1 is also very flexible.

One of the things we have to keep in mind in our nuclear strategic policy is that we have to, in a sense, plan for the unpredictable contingencies. These are often difficult to predict and the more flexibility your instruments are, the better are your chances of surviving or coming out successfully.

Senator **Warner.** Now, back to the question you mentioned earlier, how does the Defense Department contemplate employing the bomber, have you covered all of the points?

Dr. **Ikle.** Perhaps Dr. Wade may want to add something.

Dr. **Wade.** Just to summarize, Senator Warner, it is important that the bomber both penetrate and provide a platform for the delivery of long-range standoff cruise missiles. We want to force the Soviets to expend their air defense resources not only in area-wide systems but also in terminal systems. In this regard, by demonstrating the ability of the bomber at the onset to both penetrate and deliver, in a standoff mode, long-range cruise missiles, it drives the Soviets in both directions.

With reference to the ability to deliver long-range cruise missiles and reuse the platform, we can enhance the effectiveness of the B–1 bomber by a factor of two to three over the earler planning of using it only in "a one-strike" war.

Senator **Warner.** What you are saying is that you might, in fact, disperse it to secret areas and load it up with cruise missiles and put it on a standby basis?

Dr. **Wade.** I think that specific concept needs further definition.

The bomber in the initial phase should be loaded both with cruise missiles and, for example, short-range attack missiles [SRAM's] and gravity bombs. It should thus be cocked and ready to go in the sense that it is a part of the Triad force as a whole. Those new concepts of secret dispersal are very interesting and potentially viable, but I think that they need more work to fully flesh them out and put them in an operational context.

Senator **Warner.** Is it expected that the B–1 could be employed to make several runs at the Soviet Union with cruise missiles in a reload capacity?

Dr. **Ikle.** That is certainly a possibility. The more our planning and our air defenses can be developed, the more this option becomes a real adjunct to our deterrent forces.

But permit me, Senator, to reemphasize the flexibility aspects of the B–1. Flexibility is kind of a nice word which we people in the Pentagon use every other day, but here it has really a deep and very important meaning; it shouldn't be just shrugged off as an adjective that is routinely used on behalf of the program.

Nuclear war is a very, very unpredictable catastrophe. We have really had no experience with it, or no credible experience. We have been developing nuclear weapon systems for 30 years or more, piling one technological evolution on another, so there are a great many unpredictables. The "fog of war" as scientists have referred to it, would be enormous and the uncertainties would be enormous, and we can't predict what would happen and how we get out of some catastrophic event.

So, therefore, it is of cardinal importance to have offensive instruments that combine the ability to seek out targets, to carry reconnaissance capabilities, to carry highly trained crews and to move them to different areas of the globe and join up with other countries. These flexibilities are not inherent certainly in the land-based missile forces and are not, by and large, in the sea-based forces.

Senator **Warner**. On the subject of air defense, is the President's program calling for improved air defense of the United States predicated upon a perception that a significant growing danger exists of the Soviets spawning the no-warning, decapitating strike against the command and control warning and military targets of the United States?

Dr. **Ikle**. The objective of the air defense program is not directed so much at solving that problem. We are seeking improvements in our command and control systems to make these—and our other strategic systems—survivable against the threat of the so-called decapitating attack. The purposes of the air defense systems are different. They relate to the survivability of our offensive systems; that is to say, to make it more difficult and to be able to impose resistance to a Soviet all-out attack with their bombers.

Senator **Warner**. What importance do you personally attach to the President's strategic initiatives as they relate to improving our command and control and communications probabilities? As you know, this committee took some initiatives on its own in this direction in the fiscal year 1982 authorization bill, and I would be interested in having your thoughts as to ways in which the upgrading of our C^3 ability could translate to a deterrent posture.

Dr. **Ikle**. You are asking me, Senator, for my personal reaction to this emphasis. I think it shows a strong sense of realism and pragmatism by the President. He has put his personal prestige behind a neglected aspect of our strategic forces. Modernization in this area has often been pledged in prior years, it has been labeled as a serious problem in many of the annual reports of the Secretaries of Defense. Little has been done, however, by prior administrations. Fortunately the problem has happily been the focus of initiatives such as yours within the Congress to start moving ahead and doing something about it.

But now, with the full and clear endorsement of the President, and the moneys being allocated to it, we expect really to make the progress which so many experts have identified as being essential for several years now.

Senator **Warner**. Do you want to amplify specifically what we are doing in this area under the President's program?

Dr. **Wade**. Yes; and I would like to add that our progress is aided by the help of this committee in focusing on this very important part of the strategic package.

It was my personal judgment that the area of command, control, and communications was the first priority element that had to be addressed as part of the total package. We did attack that problem in putting together the strategic package. It is an area that has been somewhat neglected over the past 10 years. We have in the past focused primarily on weapon systems without providing the equivalent attention to what makes them work in the context of a total package.

In order to have endurance in our weapon platforms, you also have to have comparable capacity in C^3, which provides the foundation for using these weapons.

The attention that we have given to this matter, to the point that we have, in effect, doubled the resources we plan on spending in the next 5 years compared to our plans a year ago, provides ample indication of the priority that we assign to this very important part of the program.

Senator **Warner**. For the benefit of my colleagues who have just joined us, Secretary Ikle made a brief opening statement, and the record is being primarily developed through an exchange of questions and answers.

I would take the opportunity now to ask one more question, and I think I have touched on most of the areas, and then I will defer to each of you for questions, and then return to the main thrust of questions.

So, for my last question until I defer to my colleagues, the previous Secretary of Defense, Mr. Brown, briefly commented on the importance of survivability and prompt hard-target capability such as that associated with survivable ICBM's. According to this view, deterrence requires the ability to ride out a Soviet attack and then immediately to begin striking targets quickly.

This time urgency was considered important in deterring an attack up front because the Soviet Union would know, before it could completely assess the next of its own strikes on the United States, our warheads would be landing on and destroying their hardened sites.

How important is prompt hard-target kill capability in the concept of nuclear deterrence being promulgated under the new administration?

And, second, is it a fact that the President proposes to deploy as few as 18 MX missiles in silos of uncertain survivability as an indication that this administration does not believe that survivable prompt hard-target kill capability is as important to deterrence the previous administration?

Dr. **Ikle**. Senator, the ability to attack hard targets promptly—in the sense of the flight time of a ballistic missile as distinguished from that of an aerodynamic vehicle—one-half hour versus 6 or 8 hours—indeed plays an important role in our overall strategic deterrence posture. It is a role that President Reagan's program does not neglect.

Clearly, the ballistic missile programs, the MX and the Trident II, when they are deployed—the MX is one of the permanent basing modes, and the Trident II in Trident submarines—will provide us with a prompt hard-target capability as thus defined.

Had there been a feasible way for enlarging the prompt hard-target capability that we now have, or to put it more precisely, for improving its survivability, we would have favored that. But as was explained in the presentation of the overall program, there is no system available that would improve the survivability of the existing ballistic missile systems or to improve the accuracy of the more survivable sea-based systems in the short term.

We must put this important requirement for hard-target capability in its proper perspective. What one wishes to accomplish with this is to add to the overall deterrent by complicating greatly the planning of a Soviet attack, in that the first nuclear weapon effects in the Soviet military system may have to be expected to impact very soon, while, according to Soviet planners, their attack is still unfolding, and thus hobbling or handicapping their attack.

This has a valid deterrent effect. One of the reasons for a prompt hard-target capability, is that the targets you may want to strike may be command and control targets. There might also be a requirement for striking silos, and the question of reload capability has been mentioned in that context.

In a classified session we could elaborate on that further and discuss how it relates to the extent to which you need prompt hard-target capability.

Last, there is a valid psychological element in the idea of prompt hard-target capability; that is to say, as far as one can judge these things intuitively—and that is all we have in the situation—the Soviet expectation that their command/control centers and other critical military installations and silos may be destroyed very quickly could have a psychological impact that strengthens the deterrent.

This is exactly parallel to the point I made earlier about the long-enduring capability. That is the other end of the time scale, namely, the expectation of Soviet planners designing an attack that when their attack is all finished, and they have absorbed whatever retaliation they figure they have to absorb and have finished their evacuation, and they will try to rebuild their country, they are still subject to attack. That, in our view, also has a very strong deterrent effect, one which has been neglected. This therefore leads us to emphasize long endurance as much as any other part.

Senator WARNER. In your planning, what factoring did you use for the proposed new MX hardened silo? What do you think is achievable there by way of hardening, and what is achievable by way of survivability?

Dr. IKLE. Senator, we do not yet have a definite figure on either the cost of substantially hardened silos in which the initial deployment of the MX will take place, nor the hardness. I think in prior testimony, figures of 5,000 pounds per square inch have been mentioned and, of course, there is a direct relationship between the extent of hardness and the cost.

In the analysis and development we are engaged in, we will try to strike a proper balance between the hardness that can be achieved and a cost that makes sense in our overall program.

We realize that the survivability will decrease over time as the Soviets' capability improves.

Senator **Warner**. Dr. Wade, do you care to add to that?

Dr. **Wade**. I would like to suggest we should discuss that further in closed hearings, but in general, if you focus just on the survivability aspect of the value gained in placing the MX in a hardened silo, that the value gained is at best marginal.

However, it is also important to look at the benefits of deploying that missile system on an interim basis; that is, that we are deploying a new missile that adds to our deterrent posture in a very significant way. It is indeed an interim basis; and, we are looking for a long-term basing solution, but again deploying it as soon as possible adds to our force capability.

On the other side of the equation, it does help to focus future Soviet ICBM investment in survivability rather than on modernization or expansion, for example, of their relatively inexpensive current silo-based ICBM forces. Their silo-based forces would not be a relatively invulnerable and cheap way to threaten the United States once we start deploying the MX weapon system.

I think it is also obvious to us here that deploying the MX in Titan silos would be in itself a step forward, because the MX missile is a much more modern system with improved safety features, that would replace an older system that is truly getting old and needs to be replaced. This is part of our modernization program.

In the sense of having production lines associated with that system being deployed into silos, we will have an ongoing production line with MX. If the Soviets decide to speed up their ICBM program, we will then have a capability to match them in kind if that requirement ever were to arise.

I think it is a question of the overall value of that deployment, looking at it in the context of the total package.

As to survivability, in the context of Soviet accuracies in their weapon systems deployed today, and the improved systems tomorrow, deployment for survivability is marginal.

Senator **Warner**. Senator Levin?

Senator **Levin**. Thank you.

Does the final basing decision for the MX affect the design of the MX in any way?

Dr. **Ikle**. I would not expect it would affect it in major ways, but there are certainly elements of the MX design that might be affected by that.

Senator **Levin**. Would you submit to the committee a list of the ways that the final basing decision could affect the design of the MX, and would you supply that for the record?

Dr. **Ikle**. Yes.

[The information follows:]

MX Missile Design

We will review the requirement for boost-phase hardness of the missile, and there is a possibility that we will ease that requirement since the missiles will not be located as close together as they would have been in MPS. Otherwise, any design changes in the missile due to the new basing decisions will be trivial or non-existent. Compatibility with Minuteman silos has always been a design constraint on the MX missile.

Senator **Levin**. I believe when the Secretary of Defense was here he said the total cost of this strategic package was $180 billion in constant dollars. Is that true?

Dr. **Ikle**. Over the 5-year period, that is correct.

Senator **Levin**. What is the total cost of the strategic system, period, that has been outlined, and not just for the first 5 years, but the total cost?

Dr. **Ikle**. For its lifetime, you mean?

Senator **Levin**. Until it is totally deployed as now proposed.

Dr. **Ikle**. Well, of course, the numbers that will be deployed in the 1990's and in the next century are not yet determined. Much would depend upon the arms reduction talks and other programs, and also the exact lifetime of these systems, whether it is until 2010 or 2020. This is not yet clear.

Senator **Levin**. Let me rephrase my question: You are talking about 100 B-1 bombers and 100 MX missile sites being hardened, and 100 MX missiles in them. Just for that program which has been announced, that and the other five parts of the program, what is the total cost to deploy them? Because they are not going to be deployed by 1987.

Dr. **Ikle**. The numbers mentioned so far, you mean?

Dr. **Wade**. I would like to supply that for the record. Dr. Ikle indicated that the $180 billion is not the cost of the program. I don't have the total cost, but could supply that for the record.

[The information follows:]

Total Cost of Strategic Program

$180 billion (in constant fiscal year 1982 dollars) includes the total cost to improve and the direct costs of operating our strategic forces, communications and control, and strategic defenses over the next 6 years. In this time period, we will obligate almost all the costs associated with procuring 100 B-1s and with developing the MX missile and deploying a limited number in reconstructed Minuteman or Titan silos. The $180B figure does not include the majority of costs associated with the advanced technology bomber, the procurement of D-5 missiles, or a more permanent basing solution for our ICBM force. The bulk of obligational authority required for these programs will fall outside of our current 5-Year Defense Plan (fiscal year 1983-1987).

Senator **Levin**. It will be larger than this?

Dr. **Wade**. When you add personnel and other associated costs it will of course be larger.

Senator **Levin**. Just talk about the investment.

Dr. **Ikle**. I think the Senator has in mind that there are additional Trident boats and so on which will be acquired after the 5-year period.

Senator **Levin**. We just have a 5-year program and we will have investments in it that go beyond 1987.

Dr. **Ikle**. What we will have to do there is to estimate the number of our systems to be deployed and calculate what those would cost.

Senator **Levin**. That would be helpful, if you will do that.

What is the cost, or what part of the $180 billion is the MX hardening, the silo hardening?

Dr. **Ikle**. As I mentioned in response to Senator Warner, the silo-hardening cost calculations and design are not yet finished. The trade-off there between numbers of silos and hardness and alternative investments for these strategic dollars, that has not yet been decided.

Certainly, the kind of hardness and the number of silos which we are thinking about will be a very small fraction of that $180 billion, very small indeed.

Senator LEVIN. Is it part of the $180 billion?

Dr. IKLE. Yes, but can hardly notice it in there.

Senator LEVIN. In other words, it is less than $1 billion——

Dr. IKLE. Much less.

Senator LEVIN [continuing]. For the hardening of the silos?

Dr. IKLE. Yes.

Senator LEVIN. So, at least we have some figure.

Dr. IKLE. It would be within the margin of error of $180 billion, the margin of uncertainty.

Senator LEVIN. A margin of uncertainty could be 50 percent?

Dr. IKLE. I think a better way of saying it is that it will be less than $1 billion.

Dr. WADE. I would surmise, in reference to the cost of deploying the missile in a silo, the hardening feature should be less than 10 percent of that cost.

Senator LEVIN. As long as we have some idea we are assured it is less than $1 billion that gives us something to talk about.

What was the B–1 cost of that $180 billion?

Dr. WADE. The total bomber program during this time period is in the order of $70 billion.

Senator LEVIN. Just the B–1 part of the $180 billion?

Dr. WADE. I will have to supply that for the record.

[The information follows:]

COST OF THE B–1

We believe we can fully develop and procure 100 B–1B bombers at a total cost of $20.5 billion in fiscal year 1981 dollars (which is equivalent to about $22.3 billion in fiscal year 1982 dollars). This includes funds to equip B–1B bombers for internal and external cruise missile carriage. To insure that the B–1 program does not exceed its $20.5 billion budget, we have directed a number of management steps be taken that include freezing the aircraft design to the extent possible and holding engineering change orders to an absolute minimum.

Dr. WADE. I believe we are scheduled to talk tomorrow about programing and budgeting, and I will have the numbers with me at that time.

Senator LEVIN. If we spend more money on Stealth, could we improve the IOC?

Dr. IKLE. By and large, by putting more money into any program you can speed it up. There is a tradeoff between how many billions you spend how many months or years earlier you would have the system available. At this point in the program, all we really could provide you would be estimates.

Senator LEVIN. What is your estimate on that?

Dr. IKLE. Dr. Wade, do you have a feel for that?

Dr. WADE. I would rather discuss the program in the context that one, it is a new airplane and two, the design and many of the features have to be carried through R. & D. before a final design decision can be made. It is true that by putting more money into the program you should be able to speed it up; but you might also, and probably will in this case, have a disaster on your hands.

Senator LEVIN. Can you tell us what time we will have if we put more money in the program? We need these estimates, I presume, to know whether we want to go with Stealth, the B–1 or both. and we ought to know what the costs are.

As indicated, we could put more money into Stealth.

Dr. **Ikle**. It is possible to make a meaningful estimate by adding 20 or 30 percent to the cost in order to have it so many years sooner, but let us introduce another observation here.

The purpose of the advanced bomber is to overcome future Soviet air defenses and we are obviously learning and discovering what defense systems they are developing for the 1990's.

Now, if we rush ahead at extra expense and build the advanced technology bomber before the 1990's, with the kind of Soviet systems that we think we see coming, we may have a very expensive bomber that was meant to be advanced in the 1990's but turns out to be obsolete because of the Soviet advances.

Senator **Levin**. You are not trying to delay it as much as possible?

Dr. **Ikle**. From that point of view, it is important to face it at a time when the B–1 can no longer fulfill all of these penetration functions, rather than to bring it back into the near term and thereby miss having a capability or having to build an entirely new system for the 1990's.

Senator **Levin**. You are not necessarily looking to the earliest initial operational capability [IOC] for Stealth?

Dr. **Ikle**. No; we see the B–1 really will fulfill a very important period of penetration function, so that the advanced bomber is not needed.

Senator **Levin**. To directly answer my question, you are not looking for the earliest IOC for the Stealth bomber, is that right?

Dr. **Ikle**. In this sense, yes.

Dr. **Wade**. We consider our program with the planned IOC to be prudent in the sense of the moneys that we are spending and have available for that bomber.

I would like to carry on in trying to compare the ATB to the B–1. No. 1, it is most important to recognize that the B–52 is an aging airplane and its viability primarily in prelaunch survivability is becoming more at risk as each day goes by.

The B–1 is a proven airplane; it is a vital element of this strategic package and there is no aspect of the B–1 that has to be proven in R. & D.

The only time factor is one of producing the airplane, so we expect to have this airplane on line in 1986. That, I think, is important because of its needed capability. We know what we can do; we can put it in the force, and it should go in the force—and soon.

On the advanced technology bomber, the ATB, the question there is recognizing the enhancement to the total package as provided by the B–1. What is a solid program IOC that does not waste the taxpayers' money, and will come in about the time we expect the ATB to be ready and available, and needed, by the force.

The IOC we have in this program I personally believe to be the best judgment call we can give you at this time.

Senator **Levin**. My question is a little bit different. Giving all of that background, you are not then necessarily seeking the earliest IOC for Stealth? I did get his answer and I wonder if we could get your answer?

Dr. WADE. If you want to incur high risk and throw more resources at the program, we can then speed up the IOC.

Senator LEVIN. Have you estimated the risks and the costs?

Dr. WADE. Yes.

Senator LEVIN. And what are the costs for an earlier IOC, and how much is the risk increased?

Dr. WADE. I think the risk is biannually exponential. If you speed it up 6 months, it increases risk. If you speed it up 12 months, I think the risk is exponential in this regard.

Senator LEVIN. A year's improvement in the IOC of Stealth, triple, or quadruple?

Dr. WADE. No; it won't be that high, Senator Levin. I would state here that we will try to enhance the IOC of that airplane as the development program proceeds downstream, but we have been given a good planning number and whether or not it will be earlier than that remains to be seen.

Senator LEVIN. I will just finish up this one question because my time is up.

I would like to get two figures from you. If you increase the IOC by 1 year, what is the cost and how much are the risks, and what are the increased risks? Can you give me those?

Dr. WADE. Those figures will be judgment numbers.

Senator LEVIN. Do you have them now?

Dr. WADE. No. I can provide them for the record.

[The information follows:]

ADVANCED TECHNOLOGY BOMBER (ATB) IOC

The risk in accelerating the ATB program 1 year relates to our degree of confidence in the configuration and proposed subsystems. The current program provides time to define and develop the configuration at a prudent pace. Changes can be incorporated with less redesign impact to the program. An accelerated program compresses the time for these tasks and the faster pace will increase the development and cost risk. However, the risk of increased cost due to changes could be offset to some degree by a decrease in cost due to a shorter period of performance.

Dr. IKLE. But your impression, Senator, is well taken. In the case of the Trident II missile, as Secretary Weinberger has stated, we tried to get an earlier IOC. There we see an urgent need to have it as soon as possible within reason; that is, without going to a Manhattan-type project to get the Trident II.

Since the B-1 will serve us well in the interim, the urgency for the ATB is not similar to that.

Senator WARNER. Senator Exon?

Senator EXON. Thank you.

Dr. Ikle and Dr. Wade, welcome, and we appreciate your coming this morning.

Let me ask you a series of questions, but first I want to tell you where I am coming from on my questions. At least in the mind of this Senator, I am trying to decide whether the recent strategic program announced by the administration is one that has been fostered from a political decision or, hopefully, from a military decision. I expect that neither one of you are in a position to answer that question directly, so let me go into a series of questions here.

In the first place, the chairman said earlier, if I heard him correctly, that the administration proposes to place 18 MX missiles in some type of fixed-silo bases. Now, I thought the announced figure was something like 36 or 18 when the President announced the new strategic program. Which is it?

Dr. **Ikle**. Neither figure has been finally determined. To illustrate, the figure of 36 has been mentioned, as has 18. You have multiples of 18 if you think in terms of the Titan fields, are deployed in flights of 18. There are three fields with 18 missiles each and that is one reason for this magic 18. But as has been indicated, some of the MX missiles may be put into properly modified Minuteman III silos.

Senator **Exon**. Dr. Wade, I heard you testify about putting the MX in Titan silos. Is that your recommendation or were you just using that as an example?

Dr. **Wade**. Just an example at this time, Senator Exon.

Senator **Exon**. Where do you think the first 18 or 36 MX missiles should go?

Dr. **Wade**. The DOD assessment as to first location is still underway. There are many pieces to the problem. I would prefer, rather than just making a judgment call at this time, to wait until the studies are done. They should be done within the next couple of weeks, on a first-order basis.

With the modern command, control, and communications systems in the Minuteman field, and the silos being, I think, better located, that would be the first place I would lean to.

Senator **Exon**. Where was that?

Dr. **Wade**. One of the Minuteman fields.

Senator **Exon**. As opposed to the Titan?

Dr. **Wade**. Yes; the Titan has certain aspects, for example, age, that tilt you in that direction, but I think it is a question of looking at all of the pieces. We may end up putting some MX missiles in both systems, Minuteman and Titan silos, before it is all over with.

Senator **Exon**. Am I wrong in my assumption that when the President announced this new strategic program he, in essence, took our previously planned program and stood it right on its head? Did he not indicate at that time that they would likely go into Titan silos, or am I wrong?

Dr. **Ikle**. It was mentioned as an illustrative way of positioning the initially produced MX missiles until a more permanent basing mode was available. The Titan locations have, as Dr. Wade indicated, some advantages, and Minuteman III locations have other advantages. A combination of the two may indeed be the ideal; it would perhaps further complicate attack planning.

These are the assessments that Dr. Wade indicated we are conducting now.

Senator **Exon**. If we were going to place the MX missile in fixed silos, would it not be wiser to place those 10 new reentry vehicles known as the MX in our oldest silos, replacing the older systems, rather than the newest, which is the Minuteman III?

I distinctly sense that this administration is going basically toward putting this MX missile in Minuteman III silos and I wonder why. Minuteman III is our newest.

Dr. **Ikle**. There is a valid point as mentioned earlier, I think, by Dr. Wade. One of the merits of putting some MX missiles into Titan silos is that you have a much better system from the point of view of safety and capability than the old Titan. In that sense, your observation is entirely correct, from the point of view of trading off an old versus a new. It is the Titan that you want to get rid of and replace with the MX.

Now, to think about this really in kind of geometric terms and in terms of the map and the Soviet plans, it is not self-evident that the placement has to take place in that silo. You might get rid of the Titan and put the MX in some other place.

Senator **Exon**. You mean dig some additional holes?

Dr. **Ikle**. Or take out the Minuteman III missile if there is some other use for the Minuteman III missile.

Senator **Exon**. Where?

Dr. **Ikle**. You might want to put it in storage as a replacement, and you might want to use it for additional testing; there are multiple uses for missiles.

Senator **Exon**. You don't believe, Dr. Ikle, that the Soviets are going to be very much impressed with the number of missiles that we have in a warehouse?

Dr. **Ikle**. Not at all, no, unless they can be fired, and then they are indeed very impressed.

Senator **Exon**. They can't be fired from a warehouse?

Dr. **Ikle**. Not from a warehouse, but they could be fired from hard, deep underground shelters.

Senator **Exon**. That is an additional hole?

Dr. **Ikle**. That is a deep underground system—one of the three systems mentioned in the program that is under development.

Senator **Exon**. That is, dig new holes, is it not?

Dr. **Ikle**. The word "holes" is not the right description. It is a system that is secure from attack because of its extreme depth and hardness. There are three systems, as you will recall. One of the current systems under examination for the MX permanent deployment is this deep underground system.

Dr. **Wade**. Let me make two additional observations. No. 1 would be, which silo Titan or Minuteman III, is more conducive to hardening. That is, there is a geology aspect that we have to go through and assess.

Second, regarding the three follow-on options that we are pursuing in R. & D., the enduring airplane, deep underground citadel, and ballistic missile defense, the first two really have no bearing as to whether the interim approach is employed in the Titan field or the Minuteman field.

The ballistic missile defense option could well have a bearing as to whether a Titan deployment, with the separation distance between silos, which is different than the Minuteman field, could give you a judgment call as to which of those two deployments is more viable.

It is these considerations that we have under review right now. We do not have to make the decision at this time. We have several months before we have to, and the Air Force has it under study and we expect to be reviewing that again in some detail before the end of the year.

Senator EXON. Are you telling me then that the effectiveness and how we would use an ABM system has a role to play in that decision?

Dr. WADE. It should have, yes, sir.

Senator EXON. Are you considering the role that the ABM system plays with regard to the possibility that we would have to announce the breaking of our treaty with the Soviet Union in the ABM field?

Dr. IKLE. Yes; we are aware of the fact that the more likely ballistic missile defense systems to protect the land-based missiles would require a revision of the ABM treaty. Obviously, with the systems described you cannot be specific on that, or on the type of revision, and therefore you could not begin to negotiate such a revision until a decision is made.

Dr. WADE. But just as important is the R. & D. program that we have underway, which addresses the viability of the ballistic missile defense option associated with our strategic, land-based assets. Until we get going on the R. & D. and get a better handle on that, the issues associated with it and whether or not we should face up to the SALT/ABM treaties, is not pertinent as of this time.

Senator EXON. Possibly not. I am not thinking of it from your standpoint, but looking at it from the overall standpoint of what we are going to do to make this a less insecure world in which to live. It seems to me that the first consideration must be how we are going to get to the bargaining table with the Soviet Union regarding the reduction, rather than the further explosion, of weapon systems. That is why I am very much concerned about what I see as an increasingly suspect attitude by the administration with regard to launching out on antiballistic missile systems.

I don't know what you can say in open session on that, but can you tell us on the record and in public whether we have made any significant advances in ABM systems in the last 2 years?

Dr. WADE. I would like to cover this in some detail with you in a closed hearing, Senator Exon.

It is my judgment that as far as the technology base is concerned, we have made significant strides in our ABM technology program over the last 5-plus years.

I really want to emphasize the technology base. We have not yet put sufficient efforts toward questions associated with a specific system and the problems associated with developing such a system. It is in these areas that further work needs to be done; and, I think it behooves all of us to make sure that we really are on sound ground in the context of how viable a deployed ABM system would be.

And, more important, what we are trying to do here is to drive down the arms competition in this area which, for the past 10 years, has been run plainly by the Soviet Union. We do not want to get into, as you suggest here, an RV race. We are trying to slow this race down. But ABM's can potentially get high leverage, as high as 10 to 1; and that is what drives the RV race down. That is what we are looking for. We are looking for, on our side, stability. We don't have stability by pursuing programs in which we push the Soviets toward deploying new weapons, more RV's, and more bombs.

I might emphasize here that that is one of the reasons why we placed so much emphasis on our command, control, and communications systems. Our posture is a retaliatory posture. With improvements in our command, control, and communications, we do not have to have the equivalent number of weapons, RV's, and bombs as the Soviets, in the context of surviving an attack, because your enhanced command, control, and communications systems can better utilize those weapons that survive the attack in order to optimize your retaliatory posture.

Senator EXON. You need not emphasize in front of this committee the necessity for improvement of command and control, because indeed those of us on this committee have talked for a long, long time—as the record will show—that we are particularly weak in that area.

I am delighted to see that the administration has finally come around after 8 or 10 months to recognize that very, very important factor.

Now, let me get down to the question of whether the decision by the administration was either political or military, and what role did either or both of you play in assisting the President and the Secretary of Defense to recommend or annnounce the recommendations that they made roughly 3 weeks ago, which really turned our overall structure on our nuclear leg of our defense system upside down.

Dr. IKLE. We were both involved on a daily and regular basis throughout this period in supporting and advising the Secretary of Defense on his input to the President on a choice of the systems, the alternatives, and on the way in which our strategic doctrine and defense policy ought to be related to the systems and the possibilities for specific systems and so forth.

Dr. Wade has talked to Larry and myself in my role and we have been participating.

Senator EXON. When you say you particiated, Dr. Ikle, is that through the Secretary of Defense or directly to the President?

Dr. IKLE. Well, the proper order of things here is through the Secretary of Defense at the National Security Council, to the President.

Senator EXON. But you personally did not talk to the President?

Dr. IKLE. Not directly.

Senator EXON. Dr. Wade, could I have your answer to that question?

Dr. WADE. My answer is similar to Dr. Ikle's, Senator. The Office of Research and Engineering under Dr. DeLauer played a key role within the Office of the Secretary of Defense in formulating the various packages and the options that made up this strategic package. It was Dr. DeLauer's office that made the initial recommendation for addressing this modernization in a totally integrated package sense.

It was my personal recommendation that the first priority was the importance of C^3, in the sense of how the package was put together. That was accepted by both the Secretary and the President.

We did most of the initial homework in the context of providing various options, that went together in the final package that went to the Secretary. As it went forward from the Secretary to the President; and, of course, our job was done.

Senator EXON. How long have you been with the Department of Defense, Dr. Wade?

Dr. WADE. About 10 years, sir, in the Office of the Secretary of Defense.

Senator EXON. Then you had input to the previous administrations on our overall nuclear deterrent and what we should do?

Dr. WADE. Well, let me see——

Senator **Exon**. If you have been there 10 years, you have been under at least three administrations?

Dr. **Wade**. Yes, sir.

Senator **Exon**. Have you changed your opinion on what is our correct course of action in this area that we are discussing this morning?

Dr. **Wade**. Not at all, sir. I think I appeared before this committee over the past 10 years and my record, I think, has not deviated one iota over that period.

Senator **Exon**. Then you do indeed support the proposition of the elimination of the MPS system for the MX missile, and indeed you are for placing them in fixed silos?

Dr. **Wade**. I support the decision of this administration, yes, sir, and I certainly support placing the MX missile on an interim basis in hardened silos, because I believe deploying that system is terribly important in assuring the near-term viability of the strategic package.

I certainly do not believe that that is any permanent solution. The permanent solution still remains to be demonstrated. I believe that is a short-term solution and I personally believe that the long-term viability of the MX will be probably in one or more of the three R. & D. options that are in this package. I personally lean toward the ballistic missile defense deployment associated with an MX deployment, that is in the main on a deceptively based concept.

Senator **Exon**. A deceptively based concept includes MPS?

Dr. **Wade**. It does not include MPS as it was in detail defined by the Carter administration.

Senator **Exon**. Or the Ford administration?

Dr. **Wade**. The Ford administration did not have an MPS concept as defined over the last 3 years; it was not the same.

Senator **Exon**. So then, if I understand your testimony correctly, you believe that the policies being advanced by this administration are superior when weighed against our national defense needs, and these recommendations are superior to the previous administrations?

Dr. **Wade**. Without question.

Senator **Exon**. I thank you.

Senator **Warner**. Let me make clear that the record reflects that you still place emphasis on the deceptive concept as it relates to the follow-on basing mode?

Dr. **Wade**. Yes.

Senator **Warner**. After this interim basing in hardened silos?

Dr. **Wade**. Yes.

Dr. **Ikle**. The important thing there, Mr. Chairman, is that this be seen in the context of ABM defenses. It is really the ABM defense system that is the dominant aspect.

The deceptive basing, if I understand Dr. Wade correctly—and he and I have discussed this at great length—is a subsidiary element of that; it is not the driving force as it was for the last administration.

Senator **Warner**. Mr. Exon has brought this up and I think he touched on an area that has to be decided on by this committee: According to my rough calculation, there are about $300 million in the 1982 fiscal year budget for basing. Is that sufficient money for a 1986 hardened silo concept for the interim, or do you need more 1982 money for basing?

Dr. **Ikle**. I will have to check that. Is that money applied to the hardening program or what?

Senator **Warner**. Quite frankly, we didn't put a great deal of emphasis on the hardening process when we tried to lay down these early figures. You kept referring to the fact that we have some studies coming and it will be a couple of months, and "We can give you more data" and in the meantime we have a conference going on in which we are trying to determine the allocation of these 1982 funds.

I just give you an open door to advise the committee with respect to 1982 as it relates to basing, and if your 1986 IOC of hardened silos is correct.

Dr. **Wade**. Yes, sir, my understanding is that the package presented to your committee can be fulfilled within the strategic funding.

Senator **Warner**. Senator Nunn, if you will take a chair, I have another committee and I have quite a few witnesses standing by. Mr. Quayle will be in soon to assist in this, and I thank the witnesses very much.

Senator **Nunn**. You don't want to vote on these questions?

Senator **Warner**. I would suggest that we not vote at this time.

Senator **Nunn** [presiding]. What percentage of the total number of weapons will retirement of the B-52 represent?

Dr. **Ikle**. I would like to get a figure for you for the record, Senator.

[The information follows:]

B-52D Retirement: Weapons

The [deleted] warheads carried by the B-52D force are about [deleted] percent of our total strategic force warheads available under generated alert conditions before a Soviet attack.

Senator **Nunn**. What about the Titan missile force? Will you supply that for the record?

Dr. **Ikle**. The amount of megatonnage included in the Titan missile force, with regard to survivability or without regard to that?

Senator **Nunn**. Both ways, frankly.

Dr. **Ikle**. All right.

Senator **Nunn**. Supply that for the record. We have the estimates and the range.

[The information follows:]

Titan Force Megatonnage

The total megatonnage of the operational Titan force is about [deleted] megatons, but only [deleted] megatons ([deleted] percent) or less of it would be survivable, depending on the nature of the Soviet attack.

Senator **Nunn**. Do you envision a parallel replacement of the B-52D capability with the new program? In other words, will we be getting additional megatonnage and weapons that will replace that phaseout, or will we be creating more of a gap in the short term?

Dr. **Ikle**. We envision a replacement.

Senator **Nunn**. On a parallel basis?

Dr. **Ikle**. In terms of survivable warheads, you mean?

Senator **Nunn**. That is right.

Dr. **Ikle**. Essentially, yes, as I understand it.

Senator **Nunn**. We are taking a certain number of weapons out of the overall strategic posture and we are putting a certain number of new ones in, and each of those has its own time sequence. Are you having a parallel replacement, or are you having an early phaseout of the B-52's, which will create for a short period of time even more of a disparity or gap?

Dr. Ikle. I believe it is a parallel replacement.

Dr. Wade. I would like to put that in the record because some details are classified. There are some parts of the package which are different which helps make up this shortfall.

Senator Nunn. I am not talking about a bomber; I am talking in overall terms. Could we get for the record that sort of parallel tracking and the timing on each?

Dr. Wade. Yes.

[The information follows:]

B-52 Phaseout

The B-52's are not equipped for SRAM or ALCM carriage and due to aging problems, are far less reliable and supportable than the newer B-52G or B-52H. Aircraft modifications to the "D" models have not been funded to the extent of modifications to the "G" or "H" models.

We are short on refueling capability and due to delivery lead time the re-engined KC-135 will not enter the inventory in quantity until 1987. The refueling assets provided by the phase out of the B-52D's will enable more optimum B-52G/H mission profiles thereby increasing weapons on target.

In summary, phase out of this asset in fiscal year 1982 and fiscal year 1983 will permit allocation of funding to other activities vice this expensive resource and also permit allocation of tankers to other bomber assets thereby increasing weapons on target.

Senator Nunn. Can you provide the committee with a complete picture of the Reagan cruise missile program as compared to that envisioned in the Carter fiscal year 1982 budget, and the 5-year program?

Dr. Ikle. Yes, sir, we will do that.

Senator Nunn. We would like parallels on that, too.

Dr. Ikle. Yes.

Senator Nunn. And would you include in that also—I would like you to give us a complete picture of what is classified in that area—and will you also furnish that?

Dr. Ikle. That is correct.

[The information follows:]

Cruise Missile Programs

The cruise missile efforts in both the Carter and Reagan programs included the air launched, ground and sea launched cruise missiles as well as advanced cruise missile technology efforts.

The fiscal year 1982 Carter program would procure a total of [deleted] ALCMs whereas the current program is recommending a procurement of [deleted] PAA ALCMs or a total buy of over [deleted].

Both the Reagan and Carter programs support the December 1979 NATO Ministers' decision which procures [deleted] PAA GLCMs or a total buy of [deleted] missiles.

Both the Reagan and Carter programs supported procurement of the conventionally armed and land attack and antiship Tomahawk sea launched cruise missiles. While the Carter program supported continued development of the sea launched nuclear land attack variant, no procurement was budgeted in the near term. However, the Reagan program supports procurement of [deleted] nuclear land attack SLCMs starting in 1984 which will have both strategic reserve and worldwide Theater Nuclear Force roles.

Senator Nunn. Getting away from the details into the philosophy, how would you describe the comparative level of the U.S.-U.S.S.R.

strategic balance that this new modernization program envisages when it is completed? Are you talking about moving to parity, or are you talking about moving to essential equivalence, or are you talking about moving to superiority? How would this administration describe its strategic nuclear goal?

Dr. **Ikle**. We are not seeking superiority. A considerably larger program would be needed to move toward strategic superiority in the sense that we enjoyed strategic superiority in the 1950's or early 1960's.

There has been considerable misunderstanding on that, not, of course, in this committee, but to some extent abroad.

We also are not seeking, as I indicated in my reply to the chairman, a mirror imaging or matching of strategic indicators, weapons on the ground without regard to survivability. That also was a point relevant to your earlier question. The program as it moves toward full deployment, gives us a second strike capability—and this is, of course, its objective—that will match or provide essential equivalence, and in some cases better than that in terms of flexibility, perhaps and accuracy, than the Soviet Union would have in its residual force capability.

This is one of the comparisons that this program is attentive to that has long been of concern to specialists in this field. That is the residual weapons' capability after a Soviet first strike, theirs and ours. It is primarily in that domain that we want to obtain at least a meaningful equivalence.

Senator **Nunn**. Would it be fair to characterize your program as you envision it, in general terms, as seeking survivable essential equivalence?

Dr. **Ikle**. That would be a good description.

The thing that the Soviets have to fear is not the weapons they destroy but the ones that they cannot destroy, there is where we want to have something to oppose their plans.

Senator **Nunn**. Do you see this as any fundamental shift from the previous administration's policy?

Dr. **Ikle**. Yes; there is a shift, in that we do not want to pay attention to mirror imaging of Soviet strategic indicators. This was not, of course, the initial intent of the prior administrations, but was an unfortunate byproduct of the SALT process.

We are shifting also, as brought out in earlier testimony, to giving greater emphasis to long-term endurance or the Secure Strategic Reserve Force, which was already inherent in the plans of prior administrations but to which we want to give real meaning to.

Senator **Nunn**. By the way, do you see any essential difference between this administration's general policy and the previous administration's general policy? I am not talking about the details but I am talking about the philosophy.

Dr. **Wade**. Not the general philosophy. I think the important point is to the effectiveness of the forces. I think over the past [illegible] 10 years we have really neglected the importance, for example, of C^3. The sustainability of our forces in the context of enduring capability has been given much higher emphasis, but the general direction within the Defense Department, has been rather stable over the past 10 years, in what we are trying to achieve, and that is a stable, essentially solid posture in the context of deterring nuclear war.

Senator **Nunn**. I don't understand. Is there a difference of opinion between you two on this subject? You said there is a difference in the philosophical base of this administration, and Dr. Wade mentioned this.

Dr. **Ikle**. Dr. Wade can speak for himself, but he was talking about the central idea of deterrence and survivability, which were very much expressed by all prior Secretaries of Defense, as well as the importance of C^3, because it was expressed but not followed up as much.

I was addressing some additional aspects that were present in prior administrations and are relegated to subsidiary concern now, in the question of asymmetry and strategic indicators. It is an historic fact of which you are aware that one reason why the Titan missiles were not dismantled a long time ago is that they served a useful role in SALT. That is 10 or 12 years ago that it happened. It is those kinds of deleterious side effects we want to avoid.

Senator **Nunn**. In terms of survivability, certainly I agree with that philosophy, that we ought to be measuring in terms of survivable weapons and not just weapons, but what is the difference in the survivability of an MX in a Titan hole and a Titan in a Titan hole?

Dr. **Ikle**. You might achieve marginal improvement with hardening, which might make an MX more survivable in some circumstances than a Titan, which is not hardened but the difference is at best marginal.

Senator **Nunn**. Do you have the figures or any studies yet indicating the degree of hardening that will be achievable and the cost of that hardening?

Dr. **Ikle**. Those studies of the cost-effectiveness comparisons have not been completed. As soon as they are ready, the Congress will be briefed.

Senator **Nunn**. When do you visualize that those will be completed?

Dr. **Ikle**. I believe Dr. Wade indicated in some months.

Dr. **Wade**. Several more months. A preliminary analysis we can provide to you, Senator Nunn, in the next several weeks, but a specific design of the silo, taking into account geology and everything that goes with it, probably is several months away.

Senator **Nunn**. My understanding is that all we are after in the next several months is an agenda or general plan for a study, and really not any results at all. Am I wrong in that? That has been my understanding from the Air Force, that they don't even have an agenda for the study and what they are doing now is coming up with an agenda to show us how we are going to study these things and resolve these questions.

Are they going to have more than that, or are we going to have some cost figures and survivability figures on which we can make judgments?

Dr. **Wade**. We should be able to provide you with preliminary first-order assessments of that program as a whole.

Senator **Nunn**. By when?

Dr. **Wade**. I would judge no later than 2 weeks, Senator Nunn.

Senator **Nunn**. What will that tell us? How would you categorize these estimates in terms of level of confidence from 1 to 10, and 10 being the highest level of confidence, and what is it that we are going to have in terms of confidence in these projections?

Dr. WADE. Somewhere greater than 5, on scale of 1 to 10.

Senator NUNN. When will we have something that we can be confident of in the 6, 9, and 10 range? How long will that be?

Dr. WADE. My judgment would be on the order of 6 months.

Senator NUNN. So we are going to be called on to make decisions on the MX and the appropriations process and the authorization process long before we have any kind of data in which we can be confident?

Dr. WADE. If you are addressing the issue of hardness, vis-a-vis the Titan-Minuteman.

Senator NUNN. I am addressing the issue of survivability, and they are tied together.

Dr. WADE. In the context of employing them in either silo?

Senator NUNN. Yes.

Dr. WADE. As Dr. Ikle indicated, when you focus strictly on survivability, there is a marginal increase in survivability.

Senator NUNN. Marginal means that there is not much improvement at all. You are talking about survivable essential equivalence, and let me ask you one other question.

Dr. IKLE. But we are not relying on these 36 or so MX's. We are counting on the submarine-based forces, the sea-launched cruise missiles and SLBM's, the command, control and communications systems and the improvements for the B-52. These are the large elements where we try to get survivable second-strike forces. The interim deployment of the MX does not figure importantly in that context; it is a small element.

Senator NUNN. If the MX is not part of the survivability that you are primarily relying on, then what do we call the MX? At that stage do you call it a first-strike weapon that would have to be used very rapidly?

Dr. IKLE. An interim deployment that will complicate the Soviet planning of attack, and will pose additional demands on them in terms of timing and targeting, and therefore will add in a small way to our overall deterrent posture until the more permanent and survivable MX deployment becomes a reality.

Senator NUNN. You visualize during this interim period when the MX is relatively very vulnerable that we will go to a launch-on-warning posture for the MX?

Dr. IKLE. We do not want to rely on the launch-on-warning doctrine, for the obvious reason of accident risk and other problems with which you are well familiar.

On the other hand, it calls on the adversary to consider problems of timing and how to coordinate a disarming strike. This is an essential element of deterrence.

Senator NUNN. What does that mean, then? Do we have a launch on warning posture or do we not?

Dr. IKLE. We have to maintain uncertainty in the minds of Soviet planners.

Senator NUNN. That is fine for them to be uncertain, but how about us? Are we uncertain as to whether we are going to have a launch on attack? Let's call it launch on attack, or launch on warning and attack.

Attack is a safer term. Are we building, with our C^3 capabilities and so forth, a posture, or are we trying to build one that will give us the capability to launch on attack?

Dr. **Ikle**. Certainly we do want to be able to launch our bomber force under attack. As for the missile force, we want to have the capability so that we can launch quickly so as to deny the Soviet planners the opportunity to target our missile fields one by one in an attack stretched over a longer period of time.

Senator **Nunn**. Isn't that precisely what the MX has been designed to do, force us on a launch on attack policy?

Dr. **Ikle**. That is right, and we do not want to live under a launch on attack posture, and that is one of the reasons.

Senator **Nunn**. Isn't that the same reason as saying you are going to launch quickly?

Dr. **Ikle**. That is one of the reasons we want to have the permanent basing modes and one of the reasons why we go ahead with the Trident II system, which is a hard target capability as distinct from the C–4 missile.

Senator **Exon**. Dr. Wade, I would like to return to this deployment system a little bit. Right now how many acres of land are involved and set aside and taken out of production for security and other reasons on each of our present Titan and Minuteman silos? Is it 10 acres or 20 acres?

Dr. **Wade**. I don't recall the specific figure, Senator Exon, but I would judge less than 5 acres.

Senator **Exon**. Less than 5 acres?

Dr. **Wade**. Yes.

[Additional information follows:]

LAND USAGE FOR SILOS

The fenced area around each Titan II silo is 3 to 5 acres, and for Minuteman silos it is about 3 acres.

Senator **Exon**. Let's assume it is 5 acres for hardening those silos. Would that take additional land or not?

Dr. **Wade**. No, sir, it is just a question of adding steel and concrete to the silo itself.

Senator **Exon**. Let's go to the next step. Obviously both of you have indicated that you think we should look very closely at an ABM system for each field or each hole. How much additional land would we need for ABM deployment there around?

Dr. **Wade**. Well, it all depends upon the concept that you are talking about.

Senator **Exon**. What about the concept that you have in mind?

Dr. **Wade**. With the transportable concept you could perhaps be adding 5 acre plots per silo and you might have part of the system transportable and moving down roads. It is not a massive effort in terms of the additional land required.

Senator **Exon**. Did you say there would be roads?

Dr. **Wade**. You could have roads in between the silos in the context of transporting both radars and interceptor missiles. That is certainly one concept that has attractive features to it.

Senator **Exon**. Could you give me any rule of thumb as to whether if we go to an ABM system, would it double or would we need 10 acres where we now have 5, or triple, 15 acres where we now have 5, considering roads and areas and everything that we need? Certainly it must be something that you have looked at.

Dr. WADE. Yes, sir. There are some concepts that would have zero impact as far as needed land in addition to the deployments we have now. I think on a relative basis the impact is rather marginal for most concepts we are looking at.

Senator EXON. It is rather marginal.

Dr. WADE. Yes.

Senator EXON. Those are all of the questions I have now, Mr. Chairman.

Is there anything else that we have to ask the witnesses that you know of?

Senator NUNN. I have a couple more questions.

We have heard a lot of criticism of the MX decision, particularly on the basing mode. I think that is the normal criticism and the main criticism of the decision was that the President didn't get the normal amount of give and take on the decision itself prior to making the announcement.

I would like to know, when did you become aware that the President would recommend placing the MX missile in existing silos and superhardening them?

I say when did you become aware of that in reference to the time the announcement was made?

Dr. IKLE. The idea for hardened silos was around for several months and these components were shifted in and out as pieces of multiple alternatives which were under consideration. I would say we have been looking at that from the beginning in a complementary way.

But the way you put the question, obviously you don't mean it this way because you are aware of the overall plan and it could be misunderstood in meaning that the superhardened silos are a kind of permanent deployment for the MX missile that is intended to be survivable, which of course is not the case.

Senator NUNN. When did you become aware that that was the program the President had decided on? Was it before the announcement?

Dr. IKLE. It was before.

Senator NUNN. Approximately how long before?

Dr. IKLE. I will tell you that privately maybe some time, Senator.

Senator NUNN. Dr. Wade, when did you become aware of it?

Dr. WADE. About the same time as Dr. Ikle.

Senator NUNN. Dr. Wade, did you or your office provide to the Secretary of Defense any kind of recommendation for the superhardening of the silos?

Dr. IKLE. I did recommend to the Secretary that this be looked at as a component in various contexts and also recommended, or brought to his attention since he didn't need the recommendation, the problem of replacing the Titans so that I would say they came up in two different contexts.

Senator NUNN. On what analysis did you make this recommendation or give this option, and what kind of analysis would you have to back up this option?

Dr. IKLE. One was the need to replace the Titan because of its low accuracy and its accident proneness and similar reasons with which you are familiar.

Senator NUNN. But I am speaking in terms of the superhardening of the silos and placing the MX in existing silos. Did you have an analysis?

Dr. IKLE. I could not have made a specific recommendation and analysis, Senator, because as Dr. Wade indicated, the evaluation of the tradeoffs between cost and hardness is still underway.

Senator NUNN. How do you make this kind of decision?

Dr. IKLE. We are specifically having things in reverse order. There is an immense focus here on a subsidiary aspect of the President's strategic package, which is in essence the way of parking or maintaining MX missiles as they come off the production line for the interim period until the more permanent basing mode is available.

Senator NUNN. How long do you estimate that will be?

Dr. IKLE. Maybe 2 or 3 years.

Senator NUNN. That is before we even decide?

Dr. IKLE. The decision is scheduled for 1984 in the President's program. That would be 2 years before MX becomes available on the production line, so the decision would be before that.

Senator NUNN. Are you saying we never may even deploy the MX in this mode, if you are going to have the decision before the MX comes off the line and is there a possibility that we will never deploy the MX in these existing silos?

Dr. IKLE. I would fear that unless we move into a crash program on the permanent deployment mode to be decided in 1984, that you will have an interim period. In sequence you have to have a parking mode for the MX, and this hardened silo approach seems to be the most cost-effective way of doing it for a few years until a more permanent system is ready.

Senator NUNN. You say it is the most cost-effective way to do it on an interim basis. On what do you base that, or on what analysis do you base that statement?

Dr. IKLE. Well, it is an assessment as to what it would cost to improve the silo sites of the Titan and Minuteman III.

Senator NUNN. Do you have anything in writing on that, and is there any study, or is this just in somebody's head.

Dr. IKLE. As Dr. Wade indicated, we are developing specific figures.

Senator NUNN. But you have already made the decision and now you are developing the figures. What I am trying to get at is on what analysis did you make the decision?

Dr. IKLE. The analysis or elements of the analysis are quite simple. It is a comparison between the Titan missile and the MX, or the Minuteman III and the Titan. The Titan is accident prone and the MX will be a new weapon and hopefully accident safe. That is the comparison.

Senator NUNN. That doesn't have anything to do with any analysis on the hardening target?

Dr. IKLE. The degree of hardening of the Titan silos is very soft, as I believe Dr. Wade has said.

Senator NUNN. You just said this is going to be more cost effective. How do you measure cost effectiveness if there is no analysis?

Dr. IKLE. It is cost effective against the alternative ways of maintaining the MX that comes off the production line in a temporary mode until the more permanent mode is ready. What are the alternatives?

You have heard of all of these alternatives and they do not seem to make sense for that interim period.

Senator NUNN. Are you saying it is more cost effective to have an interim than to go strictly on a final deployment?

Dr. IKLE. You do get certain effectiveness in the interim in terms of enlarging our deterrent forces by having the MX deployed when they come off the production line. They become part of the deterrent threat that the Soviet planners have to cope with rather than sitting in warehouses.

Senator NUNN. Is there anything at all that either of you have in writing that gives any analysis on this cost effectiveness, or any analysis of what the superhardening of the silos is going to be? Do you have even the vaguest notion of what kind of dollars we are talking about.

Dr. WADE. Yes.

Senator NUNN. What would be the dollars we are talking about to go through with the interim basing of the MX as you now envision?

Dr. WADE. If you assume a deployment of 100 MX missiles, the hardening cost for those 100 missiles should be on the order of $300 to $400 million. That is the total cost. That is for the hardening itself, just adding the steel and concrete. That is like 10 percent or less of the cost of deploying the missiles in silos; so, in the context of cost effectiveness the hardening part is a small portion of the system costs.

Senator NUNN. Where do you get that number from?

Dr. WADE. That was from preliminary estimates that we have under way. I hope to be able to provide a firmer base on that in 2 weeks and much firmer in 6 to 8 months.

Senator NUNN. Isn't it true that the military people who looked at that estimate said that it was a very, very flakey estimate and that they had no confidence whatsoever in it. Isn't it true that that was the Air Force position?

Dr. WADE. I am not sure of that.

Senator NUNN. Who would be, then, if you are not?

Dr. WADE. The number I have given to you of $300 to $400 million is a preliminary assessment received yesterday morning from the Air Force.

Senator NUNN. What kind of confidence do they have in it?

Dr. WADE. I believe within a factor of 2. It certainly won't be much lower than that, and I don't expect it to be more than a factor of 2 higher than that. Again that is on the basis of deploying the 100 missiles.

Senator NUNN. Could you give us your personal views on the advantages and disadvantages of superhardening of the existing silos, your personal views. I am not asking for the administration's position.

Dr. WADE. First of all I believe deploying these MX missiles in silos on an interim basis adds significantly to the total strategic package. It presents the Soviet Union for the first time with a U.S. deployed force with capabilities which should start moving him in the direction of modernizing his own ICBM forces in other modes than silos.

Second, it starts the production line for MX.

Third, it adds to the uncertainty in the overall deterrence equation. Let me address that in the context of the wisdom of adding hardness to the current silos. If the cost number is less than 10 percent, then overall it is a worthwhile thing to do. For example, our physics understanding on crater phenomenon is not absolute because we haven't been allowed to test in any relevant way for the last 20 years. There is an uncertainty here in this respect. Although I would note that the size of the Soviet program in the effects area of nuclear hardening over the past 10 years has been rather massive in scale, I would estimate that perhaps the Soviets have firmer understanding on matters of this kind than we perhaps ourselves do today.

So there is really no viable add-on to help significantly in the way of survivability. I think it is in the other context of deploying the system and the value we get before we end up in a permanent basing solution.

Senator NUNN. What you are saying is that we are not enhancing survivability but making the Soviet force less viable?

Dr. WADE. We are adding thrust toward his thinking in that context.

Senator NUNN. We are doing unto others as others have done unto us?

Dr. WADE. We would like to move the Soviets in the direction of enhanced stability for us.

Senator NUNN. I would like to move the Soviets where they would have to begin thinking in terms of a mobile land-based system.

Dr. WADE. I think that is helpful if we can do that.

Senator NUNN. Do you say this in an arms control context, that once we both become more vulnerable with our land-based ICBM force, that we might have more arms control on both sides?

Dr. WADE. If you have a force posture as a whole, both land-, sea-, and air-based systems, that is truly mobile and in the sense of enhanced survivability, then the interest of both parties toward significant reductions may go up. Your confidence in the credibility of such an agreement also goes up. So I would argue there that your interests should also go up.

Dr. IKLE. Might I add here, obviously we do not think in terms of symmetry. The United States is not buying a first-strike capability. We do have to deter a first strike. The Soviet Union has acquired a system which is moving toward that kind of capability. There is no intent here to develop any first-strike capability in that sense.

Senator NUNN. When you talk about requiring the Soviets to go to a more mobile system, you are implying a first-strike capability, aren't you?

Dr. IKLE. Why is the mobile system better for us than a fixed system? It means that more of their defense rubles have to go into the support systems, so they cannot concentrate all of their assets on offensive capability and thus become a greater first-strike threat against us. It makes it more costly for them to undermine our forces. That is the primary reason why we have a certain slight preference for a mobile system as against a fixed system.

Senator NUNN. What if instead of doing that they decide to go to a long-term warning, which is essential at this stage, what some logical people could say that we are moving to, because we don't have that mystical basing mode that you are now envisioning, and all we have is a more accurate missile in a vulnerable position, and plus we are operating our C^3 and our war fighting capability.

We are also talking, at least vaguely, in terms of being able to increase our quickness with which we could launch those missiles. Suppose they do the same thing? Suppose we both end up, not with a mobile missile system or survivable land-based system, but rather with a very accurate system in a very vulnerable position with an enhancement of long-term warning or attack capability.

Has the combination of all of that somewhat inadvertently led us to a rather dramatic lowering of the nuclear threshold if we both take that up?

Dr. IKLE. The very opposite, Senator. The very thrust of the strategic force modernization program is its emphasis on the the Trident II missile—to have a military deterrent capability there. The emphasis on survivability for the bombers and the command and control system and the painful delay in the search for a solution on an MX deployment system, very much speak for the primary thrust that lies behind the President's program; namely, to have survivability in a stable way and not having to rely on a hair-trigger response.

It is precisely that which some of the critics have mentioned in the time it took to make this decision final and the fact that we do not have a permanent deployment mode for the MX by the time it comes off the production line. These are painful factors but we have accepted these delays precisely to avoid what you just described, that is leaning toward a hair-trigger system.

Senator NUNN. To avoid that, two things have to happen: First of all, we have to come up with a real alternative.

Mr. IKLE. We have, yes. We have to come up with the Trident II missile.

Senator NUNN. I am talking about the land-based system then.

Senator EXON. We have come up with, of course, the B-1 to improve it.

Senator NUNN. The Trident II missile has something to do with survivability, but the Trident II missile is again a weapon that would cause them to do certain things because of its accuracy. Without the Trident II missile we would still have a survivable force, a submarine force, at least I have heard no contention to the contrary, and I know that enhances survivability because it increases range. But I have heard no contention the Trident II missile is just there for survivability.

Dr. IKLE. I tried to be responsive to your question, and there are two aspects to it. One is the desirability or undesirability of accuracy, and the ability to destroy Soviet military targets. Clearly the approach of this administration, and there may be a difference with prior administrations, is that it is important for deterrence to have a capability to put Soviet military targets at risk.

A lot of people living in Moscow that are involved in the decision, if there is a decision to atttack, it is their assets and their ability to come out on top that we want to put at risk. This is what we want to deny them. Hence we put the emphasis on that.

The second element is whether we are relying on our side on driving them toward systems—which may or may not be accurate, let's assume they are accurate—which would have to be hair-triggered in order to respond and not be lost by a surprise attack. There again, as I have mentioned earlier, the very thrust of the overall Reagan program and the costs and delays we have to incur all have to do with the search for enduring survivability.

Dr. **Wade**. May I make an observation on that. When you assess either a mobile system, or a silo-based system, or MPS systems, the IOC is not the really important date, but the rate of full operational capability is. For example, when you compare the first MX in late 1986 going in the first silo, vis-a-vis one MX being employed either in a mobile mode or for instance in 10 shelters, as far as the survivability comparison between these three aspects they are almost the same. You really have to ask yourself the question, at what time downstream do you have a system deployed that is viable, whether it is a deceptively based system or with an ABM system, that provides that needed leverage against a massive Soviet attack.

So when you try to compare a single or a few MX's in silos to several MX's in 10 or 20 or 30 or more shelters, the value comparison is almost the same.

Senator **Nunn**. I understand, it is a good point. What I am getting at is, it seems to me we are at a rather crucial crossroads and if the Soviets don't behave as you hope they will behave, that is moving away from a fixed-based plan system to a more mobile system and therefore diverting resources in that direction and possibly giving them more incentive for arms control and what you call significant reductions.

Suppose, though, after having read a good many views in America over the years that we should go to a launch under attack rather than spend huge amounts of money on survivability, and they decide that that is a good idea, that we are not going to expend all of that money in making their land-based missile force survivable and they go to a launch under attack policy.

Let's assume someone makes that decision in a couple of years and it becomes apparent, how do you feel then about nuclear survivability in the world?

Dr. **Ikle**. It is a continued concern that the emphasis on rapid launch that the Soviets have been talking about and writing about could lead to instability. I guess the instability you are referring to, Senator, would be an unintended or accidental launching of their missiles. I assume that is what you are referring to.

Senator **Nunn**. That is entirely possible, and I think it is possible in a confrontation situation, that they could decide that the best defense is to make sure that they go first. I presume that is what we have been worried about for a long time.

Dr. **Ikle**. There are two separate concerns, though. There are in certain postures on either side advantages to going first, as you put it, Senator, and it is that advantage that we would like to reduce in order to obtain stability. As a very separate concern that is really of a quite different nature, there is a concern about accidental launch or accidental war.

The latter, we assume, any rational or halfway rational Soviet planner would want to avoid because that is not in their interest. There were periods when the Soviets expressed public concern about that aspect, as much if not more than we have.

Senator **Nunn**. My point is, if they decide to go to a launch-under-attack policy rather than to go into survivability of a land-based force, the whole evolution of their arms race would have inadvertently moved us to a much lower nuclear threshold; would it not? In other words, if you were a Soviet planner and if you took the Reagan proposal of putting a more accurate missile in a vulnerable hole when you saw no long-range solution forthcoming, then you might very well deduce the Americans have gone to a launch-on-attack policy inadvertently or perhaps even purposely, and therefore perhaps they ought to do the same thing.

Isn't that just about as great a possibility as the other possibility of their saying our land-based force is now vulnerable and we have to quickly do something to make it invulnerable and moving in that direction when America hasn't done that itself?

Dr. **Ikle.** I don't think the alternatives are that clearly separated. The capability for rapid response is inherent in many of United States and Soviet systems, and it has to be taken into account as far as our systems are concerned by Soviet planners of an attack. That is a very important element in deterrence. It forces upon the attack planner the need for synchronization.

They are concerned about it because it is in our policy and they would see the plans in the same way. Whether they will respond to the fact that their ICBM's become vulnerable by changing their operating or planning procedures, or whether they are going to respond by moving to mobile missiles, it is not yet clear.

We can look back historically to the fact that Soviet forces were at risk from our forces rather more than we would expect them to be in the future. You know the extent to which their forces were at risk in the 1950's or 1960's. In that period they did go into considerable investment to harden their missiles in order to make them survivable against the then U.S. threat.

So, judging from what they have done historically one would think that they would go more in the other direction, which probably would be the mobile-basing mode, since hardening has run its course, given accuracy technology.

Senator **Nunn.** Hardening has run its course but that is precisely what we are doing.

Dr. **Ikle.** We are talking of a different concept there, the deep underground citadels, which do not depend upon CEP, the accurate targeting, but hardening that is effective because the incoming missile would be too far away from its target. That kind of hardening does provide long-term survivable basing.

Senator **Nunn.** Neither does the kind that we are talking about. I am very concerned that a Soviet planner might very well conclude that America has given up on survivability of the land-based missile force and has gone to a launch-under-attack policy. That is as frank as I can say it. If they go to a similar posture, particularly with no arms control efforts at all going on, and no apparent long-term strategy, maybe there is a lurking strategy behind the administration's position that has not so far emerged or is emerging here this morning, and maybe we are deliberately risking a launch-under-attack policy on both sides so as to drive both sides toward meaningful negotiations and dramatic changes in our force structure.

If that is true. I think there would be some advantage to being rather up front about it, particularly when we have allies coming apart all over Europe because they don't see any such strategy. So I am saying if there is any such strategy I think you ought to seriously consider coming forward with it.

Dr. IKLE. I think it is important to maintain a sense of proportion here. I think the Soviet military experts looking at President Reagan's strategic program will see huge investments going into making command, control, and communications survivable. That does not indicate reliance on a launch-on-attack system. For that purpose, you would not need such huge investments in command, control, and communications.

The Soviet planner looking at the President's program would see large investments in new Trident missiles and Trident boats. Here again the same conclusion emerges. He will see a very large investment going into a bomber which indeed is being launched on attack but which has recall capabilities, with which I think we are all familiar, and it therefore does not pose that risk. So a Soviet analyst with any sense of proportion will see that there is a very small factor here of interim deployment which is clearly indicated. If he can reach any rational conclusion he will reach the opposite conclusion—that we are making every effort to have a long enduring survivable system for which the option of launch under attack is not an essential aspect.

Senator NUNN. I hope you are right.

Senator QUAYLE. Dr. Ikle, have you read the report on MX basing?

Dr. IKLE. Yes.

Senator QUAYLE. What did you think of it?

Dr. IKLE. It is a good study.

Senator QUAYLE. Can you summarize for us what the panel's views were on MX basing?

Dr. IKLE. I have been briefed by Dr. Townes, and I think it would be better if someone else summarized the report of that committee. It should be done with accuracy and you may get into classified portions. The Secretary of Defense himself may want to summarize it, or there may be other ways.

Senator QUAYLE. Did this report rule out MPS as being the best basing mode for the MX?

Dr. IKLE. Again I am not the right witness to speak.

Senator QUAYLE. Give us your views on it. You have read it.

Dr. IKLE. It was an independent panel. I have had discussions with Dr. Townes, and he and I dealt with the problems of the MPS system as it was envisioned by the last administration, and the weaknesses thereof and the reasons why this is not the right path to choose.

Senator QUAYLE. What were the major weaknesses of the MX system?

Dr. IKLE. I am now speaking for myself because I can do that best, rather than speaking for Dr. Townes or his panel. There were probably different shades of view there like any other panel, so I won't take it upon myself to give a summary here. But in my view the principal weakness of the MPS system as envisioned last year is that it was planned against a rather malevolent Soviet Union, one planning a surprise attack, but at the same time depending upon a very benign Soviet Union, one that is going to abide by limitations even after the expiration of an agreement. It assumes that even after they have invested billions of dollars in their system, we can get an acceptable follow-on agreement which will still maintain the limitation on warhead fractionation, which as I understand it, was essentially our predecessors' approach.

If you do not count on that you get the competition of additional warheads that the Soviet could deploy and perhaps in addition, the proven accuracy that they might develop for use against the continued expansion of our system. That does not look like a situation which would be highly conducive to good arms control agreements or to stability.

Senator QUAYLE. What is your personal opinion of the best basing mode of the MX?

Dr. IKLE. Among the three modes chosen I would not venture a guess now. I would really want to see the analysis. Each one of them has attractive features.

Senator QUAYLE. What three are we talking about?

Dr. IKLE. We are talking about the deep underground, Big Bird, and BMD. I can well see a combination of the costs which might permit two of these modes as the best way to go, if not all three. You may be aiming at a Triad within a Triad to get further stability.

Senator QUAYLE. You said the three are the Big Bird, deep underground and the existing silos?

Dr. IKLE. BMD with appropriate silos or some other basing mode.

Senator QUAYLE. Then the MPS is no longer a consideration?

Dr. IKLE. The multiple protective shelter of the last administration, for the reasons I summarized, is not the right way to go.

Senator QUAYLE. So we are down to those three?

Dr. IKLE. Yes.

Senator QUAYLE. Are we going to get a copy of the Townes Report?

Dr. IKLE. You will have to direct your question to the Secretary of Defense. It is not my decision. It was a report to him.

Senator QUAYLE. You do think we ought to be able to read that?

Dr. IKLE. Basically I am in favor of Members of Congress being fully informed. There are however sometimes reasons why things are of an internal nature so that they are privileged information. I am pretty familiar with it, Senator. There is a concern that you inhibit candid advice. If I write a memorandum to the Secretary of Defense on something, and I have to expect a half a year later you will want to see it, I will consider that when writing it.

Senator QUAYLE. Will you convey your opinion to the Secretary of Defense that we ought to be allowed to see the report? Supposedly it is a very well respected panel report and you used it to come to your conclusions. Isn't that precisely the vehicle that you used to come to your decision?

Dr. IKLE. It is a very valuable report. Both the oral report and written reports of the Townes Panel were invaluable. But there were other inputs from the Department of Defense and the Services to the Presidential decision.

Senator QUAYLE. Since we are going to go with the B-1 and Stealth and the cruise missile, and talk about Trident II and have put MX's back in silos, what about the argument and I appreciate Senator Nunn's observation they were going to launch on warning, or it could be interpreted as that—that we are getting away from the so-called Triad.

It is not for strategic reasons that we don't have the MPS, but basically there are political reasons that we are not going to be able to do some of these things. In the next couple of decades what we really ought to be concentrating on is an air and sea capability and just admit that, as regards the land based situation, we are not going to get an MPS because of political considerations and not because it is not the best system.

I think the military experts would say that MPS is the best basing system for a land-based missile, but political implications rule it out. Why shouldn't we, therefore, really rethink the entire Triad concept that now dominates our Armed Forces strategy?

Dr. **Ikle.** It was not a political decision, but in my mind political decisions are perfectly legitimate.

Senator **Quayle.** You don't think politics had anything to do with it?

Dr. **Ikle.** I am in favor of politics, that is what drives our lives and our Government. But in this case it happens to have been an analytic military assessment which led to the conclusions that unless the Soviets (*a*) act benignly when the SALT II agreement expires, and (*b*) very agreeably come around to an extension of the limitation on their warhead fractionation—both of which would be contrary to what we have seen them do in the past—then you get into a competition where it can be cheaper and easier for them to proliferate warheads than for us to expand the shelters to stay ahead of them.

That would be an unsatisfactory or unfortunate competition.

As to the second part of your question on the Triad, I do think we are moving away from a Triad but in the opposite direction, Senator, to a quadrilateral, in that we have three different basing modes from which to choose for the permanent placement of the MX. We have two sea-based systems instead of one like the previous administration—one aerodynamic and one ballistic—with different properties for the Soviet Union to contend with.

Senator **Quayle.** But the old Triad or new Triad or the best Triad has land and sea based, and air-launched missiles, and two out of your three options on the MX are to go to sea and air basing and only one of the three——

Dr. **Ikle.** No; two would be permanently on land and one would be at sea.

Senator **Quayle.** I suppose you could say that the Big Bird would be on land before it goes up in the air. It looks like you have a two out of three chance, whatever the final conclusion is, to change the Triad and we are apparently going in that direction.

Dr. **Ikle.** Maybe we should step back here for just 1 minute and see what it really is that we all want with the Triad. It is not so much one Triad or the holy trinity but it is specific. We want to make sure that some Soviet planners could imagine our offensive attack. We are concerned about ways in which our submarines might become suddenly vulnerable and we don't want to rely only on that system. We are concerned about a possible ASW breakthrough; we thus don't want to rely only on our SSBNs?

We are concerned about their making things which are fixed on land vulnerable, and this has happened. We are concerned with their finding ways of stopping our aircraft that fly into the Soviet Union and we thus don't want to rely entirely on the B-1. We are concerned about their getting things which fly in the air and hence there is a joint concern about both the B-1 and possibly the air-based MX in the future.

As you see, it is really not a matter of Triad in that simple sense of three things, but it is a multiplicity of basing and penetration modes also, so that no single technological development could put the Soviet Union in the position of a disarming first strike capability.

Senator QUAYLE. Do you have some detailed analysis which shows that Big Bird or a deep underwater basing are more cost effective than MPS and also that these approaches can meet the military requirements for which MPS was designed?

Dr. IKLE. There is a preliminary assessment that the problem of the continued Soviet buildup overcoming our systems could be mitigated by a deep underground or a Big Bird system. In the final analysis they do not yet exist, but there are promising indications that these systems could be more viable to further Soviet efforts to overcome them because of certain of their characteristics.

Senator QUAYLE. What study or analysis prompted you to go in this direction? Is there something that you can point to, or give to us?

Dr. IKLE. It is that they strain Soviet offensive capabilities in different directions. The potential vulnerability of the Big Bird system is very different from the potential vulnerability of the B-1 or the advanced technology bomber. There are different ways in which the Soviets would want to counter this system. It has different characteristics. The deep underground system is not meant on the other hand to serve all of the functions or all of the missions of the land-based missile. It is just certain aspects of it, and I mentioned this before, related to the secure strategic reserve element of our strike force.

Senator QUAYLE. Will there be a detailed analysis provided to us to show that these approaches can in fact meet the military requirements?

Dr. IKLE. We will increasingly have more detailed analysis on these systems as the research progresses, and perhaps Dr. Wade could be more specific.

Dr. WADE. Given an aircraft as a concept that was basically invented over the last couple of months, and the Townes panel strongly recommended that it be pursued, my judgment is over the next year we have to make a very indepth assessment as to whether that concept is truly viable. It might be viable in other use modes but as far as the answer to your question, it is going to take some time to get the final answer, Senator.

Senator QUAYLE. What role will the B-1 play?

Dr. IKLE. Well, it serves several very important functions. By being able to takeoff much faster than the B-52, it will be more survivable than the existing bomber force. By posing greater challenge to the Soviet air defense system it will be able to penetrate better and longer. To the extent that its ability to penetrate will eventually, or might evenually, be overcome by the Soviet Union, it will have forced them into large expenditures thereby diverting their military rubles from other, more-threatening offensive parts of their forces.

It is possible for us to launch that force on warning and have arrangements for safely recalling it, which gives us additional flexibility. It can be dispersed in ways in which it could be manned within a short period of time, both in the United States and—if it were so desired—

overseas during crisis or during a conventional war. This gives us additional stability to our deterrent force.

It can be put on alert to provide a strong political signal in a crisis or in limited war. It can be used for conventional bombing applications which could be very important and for which eventually the B-52 will no longer be viable. It has the flexibility of seeking out changing targets to a much greater extent than can a ballistic missile. It is an instrument for wartime contingencies that we cannot foresee. It is thus perhaps one of the most important elements of our overall military forces, and not just strategic forces.

Senator QUAYLE. It could be a cruise missile carrier?

Dr. IKLE. Yes; and in that way it can overcome Soviet air defense systems that might be able to interdict the bomber itself.

Senator QUAYLE. What is its primary function? Is its primary function to be a manned penetrating bomber? Is that the primary function?

Dr. IKLE. It is both a manned penetrating bomber and subsequently usable as a cruise missile platform.

Senator QUAYLE. On what date will it tend to become ineffective as a manned penetrating bomber?

Dr. IKLE. It depends upon our estimates of the speed and skill with which the Soviet Union moves ahead on improving their air defense system. I think our estimate says toward the 1990's.

Senator QUAYLE. On what date are the B-52's estimated to become ineffective?

Dr. IKLE. Maybe Dr. Wade will assess the shortcomings.

Senator QUAYLE. What I am trying to define is the window that they have, and at what date will the B-52's become useless as a penetrating bomber?

Dr. IKLE. The B-52 is already obsolete now in the sense——

Senator EXON. We have a 9-year gap, then?

Dr. IKLE. The B-52 has the drawback now in that it can't take off or escape from a Soviet surprise attack the way the B-1 can. This again is a matter of degree and it depends upon our assessment of the Soviet SLBM capability. We therefore want to move ahead rapidly with programs to improve the survivability of the B-52 and then a follow-on B-1 to fill that need.

Senator QUAYLE. What other planes besides the B-1 will carry cruise missiles?

Dr. IKLE. The B-52.

Senator QUAYLE. How long will we be using the B-52's as cruise missile carriers?

Dr. IKLE. Dr. Wade, is there a specific terminal date?

Dr. WADE. Some of these details are classified and we shouldn't get into them to that depth here, but I would surmise that certain portions of the B-52 force should be viable as a standoff cruise missile carrier, with the B-1, to something like the year 1990.

Dr. IKLE. Except for the problem of surviving on the ground or taking off fast enough to escape. That is the fundamental advantage of the B-1.

Senator QUAYLE. You will get the B-1 in 1986?

Dr. IKLE. That is possible.

Senator QUAYLE. I understand we will have a closed session hearing tomorrow. I will pursue some of this tomorrow. I now have to leave to preside over the Senate.

Senator QUAYLE. There are additional questions that we would like to submit, and you can supply the answers for the record.

[The questions, with answers supplied, follow:]

QUESTIONS SUBMITTED BY SENATOR JOHN W. WARNER

Senator WARNER. Do you have any detailed analysis which shows why "Big Bird" or "Deep Underground Basing" are more cost effective than MPS or that these approaches can meet the military requirements for which MPS was designed? That is, what study prompted your decision?

ANSWER. Over the years there have been literally dozens of studies made within the Defense Department and by outside experts on the merits of various ICBM basing schemes. On the basis of a number of such studies, the Administration concluded that the MPS system was not a long-term viable option. Our concerns about this proposal have been set forth elsewhere. While there has been less study of the "Big Bird" and Deep Underground Basing options, the research that has been done has been sufficiently impressive to warrant continued investigation over the next few years. Current plans call for a final basing decision being made in 1984.

Senator WARNER. Dr. Ikle, could you describe the relationship of your various proposals and the provisions of SALT I and SALT II?

ANSWER. Our strategic program is consistent with our stated policy that, while our SALT review is underway, we will take no actions which will undercut existing agreements so long as the Soviet Union exercises the same restraint. Although we did not design this program so that it would avoid conflicts with the SALT I or II agreements, it is a fact that this program will have no near-term conflicts with existing agreements. The relationship between our planned strategic programs and provisions of the SALT I ABM Treaty, the SALT I Interim Agreement, and the SALT II Treaty is discussed below.

The United States continues to be a party to the ABM Treaty. The proposed research and development activities in the area of ballistic missile defense are consistent with the terms of the Treaty. For example, the development program does not now involve the field testing of mobile land-based components or the testing of interceptor missiles with more than one independently guided warhead (activities prohibited by the Treaty). If, in the future, we should decide that an ABM system is necessary to ensure a survivable ICBM force, we will consider seeking amendments of the Treaty at an appropriate time, to permit us fully to test and deploy such a system. Testing the components noted above might be required. Also, a system would likely exceed the allowed numerical limits on radars, interceptors, and launchers. There would also probably be conflict with the geographic restrictions, which permit only a single deployment area of limited size.

TOWNES PANEL REPORT

Senator WARNER. Dr. Ikle, could you interpret for us in your own words what the Townes Panel's views were on MX basing?

Dr. IKLE. Certainly, the Townes Panel played significant but not controlling role in all this. [Deleted.]

THE STRATEGIC PACKAGE COMPLICATES SOVIET PLANNING

Senator WARNER. Dr. Ikle, what part of your strategic package most complicates Soviet planning?

ANSWER. I don't believe I can isolate "the" most troubling thing (in Soviet eyes). The Intelligence community may be in a better position to address Soviet thinking. But the President's program does burden Soviet planning in several ways: Their air defense problem will be aggravated in three ways: ALCM's, the B-1, and in the 1990s, the advanced bomber. They cannot escape swift retaliation by hardening their important facilities, because of the capability of the MX which we will deploy in 1986. And they cannot plan on outlasting the U.S. by attacking us with part of their arsenal and keeping the rest in reserve, because of the survivability and endurance our communications and control systems and forces will have.

FURTHER STRENGTHENING THE STRATEGIC PROGRAM

Senator WARNER. Dr. Ikle, what part of your strategic package do you believe needs most to be strengthened?

ANSWER. The President and the Department of Defense have formulated a comprehensive strategic program that corrects the significant weaknesses in our current posture and builds on our strengths. Because of the dangers we face in the years just ahead, we would have liked to strengthen our strategic posture more quickly than the necessary leadtimes for strategic force improvements will permit. That is why it is so important that we vigorously pursue the B-1B and tho MX: both bring needed strengthening as quickly as is possible.

WHY NOT MPS?

Senator WARNER. Dr. Ikle, why would your strategic package not have been more dynamic, more flexible, and more complex for the Soviet Union with a mobile and/or deceptive basing mode included for the MX missile?

ANSWER. ICBM mobility per se is not bad. For example, we are examining, as a long-term MX basing option, the Continuous Patrol Aircraft which depends on mobility for survivability. However, deceptive basing as in the MPS system of the previous Administration—posed no real problems to the Soviets. To threaten MX, the Soviets simply had to continue with the ICBM program they are already doing. If the U.S. is going to alleviate its strategic problems, we cannot afford programs (like MPS) that are years behind the threat.

Senator WARNER. What importance do you personally attach to the President's strategic initiatives as they relate to improving our command, control and communications capabilities? As you know, this committee took some initiatives of its own in this direction in the fiscal year 1982 Defense Authorization bill and I would be interested in having your thoughts as to the ways in which the upgrading of our C^3 capabilities translates into an improved deterrent posture?

Dr. IKLE. The President's initiatives relative to improving our strategic command, control and communications system reflect three general objectives for strengthening our deterrent posture: the system should perform well in peacetime, including exercises which simulate the stress of actual conflict to some extent; the system should be capable of supporting a prompt response to a large scale nuclear attack which includes efforts to disrupt strategic command and control functions, to the degree that the stresses imposed by such an attack (including communications blackout and electromagnetic pulse phenomena resulting from nuclear detonations) can be calculated; and the system should have endurance characteristics consistent with the strategic forces and supportive of national policy for deterrence.

Achievement of these three objectives will significantly strengthen our deterrent posture, because it will mean that we will have attained the capability for directing force employment according to our declared policy for deterrence of nuclear conflict.

Senator WARNER. Can you discuss with any degree of specificity what new steps or initiatives in the C^3 area are being proposed?

Dr. WADE. In the near term, we are emphasizing improvements which will strengthen survivability and which will provide the foundation for achieving greater endurance of strategic command and control of the offensive forces In the main, the initiatives taken by the Senate Armed Services Committee also support these objectives, and will thereby accelerate realization of the essential foundation capabilities. Moreover, the Committee initiatives are generally consistent with and in some instances directly enhance the longer range efforts that have been identified for achieving endurance for an extended period beyond the first nuclear attack.

We are of course sustaining the efforts to assure survivability of essential command and control functions. The new initiatives comprehensively address requirements for strategic force control during extended conflict. They include programs for: enduring surveillance and attack capabilities; near real-time reporting of nuclear attacks against U.S. and allied targets and for assessing the immediate consequences of retaliatory strikes; target acquisition; a proliferated terrestrial communications network for linking sensors and forces to decision-makers; enduring command and control facilities; strengthening our capability to use warning, communication and navigation satellites following an initial attack; augmented communications to the submarine force.

STRATEGIC FORCE STRUCTURE CUTS

Senator WARNER. Dr. Ikle: Of some concern to members of this committee is the fact that the President's strategic force modernization program entails actual reductions in the existing strategic force structure. Can you give us an idea of what capabilities, as a percentage of our total forces in fiscal year 1982, fiscal year 1985, and fiscal year 1990, we are giving up by retiring the B-52Ds and the Titan II missiles?

ANSWER. Measured in terms of warheads at full (wartime) alert, the B-52Ds and Titan IIs together are about [deleted] of our current force and less than [deleted] of our planned capabilities in fiscal year 1985 and fiscal year 1990, respectively. As the oldest parts of our strategic forces, however, the B-52Ds and Titan IIs are expensive to operate and would have special operational problems, which mean that their retirement will cost us much less in real military capability than even the small numbers above would suggest.

PROMPT HARD TARGET KILL

Senator WARNER. The previous Secretary of Defense, Harold Brown, frequently commented on the importance of survivable, prompt hard target kill capability such as that associated with survivable ICBMs. According to this view, deterrence requires the ability to ride out a Soviet attack and then immediately begin strike targets of our choice quickly. This "time urgency" was considered important in deterring attack "up front" because the Soviets would know that even before it could completely assess the impact of its own strike, U.S. warheads would be landing on and . . . even hardened sites.

How important is prompt, hard target kill capability in concept of nuclear deterrence being promulgated under President Reagan?

Is the fact that the President proposes to deploy as 18 MX missiles in silos of uncertain survivability an in that this Administration does not believe that survivable hard target kill capability is not as important to deter as had been believed by the previous Administration?

ANSWER. Survivable, prompt hard target kill is a valuable military capability. Accordingly, the Reagan strategic program proposes to deploy more survivable, prompt hard target kill capability than the previous Administration's program. The D-5 will be survivable starting from the first missile, and MX, in its long-term basing mode, will be survivable as well. By contrast, the D-5 was absent from the previous administration's program, and the MPS basing system for MX would not have been survivable without the addition of effective ballistic missile defense, which is not yet available given current technology.

ABM

Senator WARNER. Previous testimony before this committee has emphasized the synergistic effect which could be realized by using a ballistic missile defense system to defend preferentially deceptively-based ICBMs. Has there been some change in the technology which makes this testimony invalid? Is it now the case that, in the decade of the eighties, we can expect to realize as effective a defense of fixed silos with existing and projected BMD technologies as was previously believed possible using a modified LoADS BMD system together with deceptive basing of MX?

Dr. WADE. There have not been any recent significant changes in the ballistic missile defense technology (BMD) that is available for the defense of ICBMs in the near term. Combining preferential deceptive ballistic missile defense (BMD) with deceptive-basing of ICBMs should be capable of providing a highly leveraged defense that can be built with existing technology. In addition, because of the high leverage potentially obtainable through deception, the number of BMD components required, and therefore the cost of defenses, should be significantly less than deployments that do not employ deception. However, we believe we can obtain high effectiveness in defense of fixed silos also. This may be desirable because of the complexities of deceptive-basing but may require a significantly greater number of BMD interceptors, and probably with somewhat greater performance. We will have to conduct additional development over the next few years to be confident that such a defense represents a reasonable way to proceed. The LoAD system is being reconfigured to achieve a greater effectiveness in defense of fixed silos as part of the effort. This is possible because of reduced environmental constraints and additional flexibility in the basing. Other concepts to LoAD are also being investigated.

ENDURING NUCLEAR WAR

Senator **Warner**. Dr. Ikle, recent press accounts have suggested that a major policy element in President Reagan's strategic modernization program is the emphasis on being able to conduct an "enduring nuclear war," a war that lasts days, weeks, and months. "Endurance" according to this concept would be more than the ability of weapons systems and C^3 to ride out an initial attack, it would involve the ability of the United States to reconstitute its forces again and again over long periods punctuated by nuclear attack.

Is there a Reagan Administration policy which gives greater priority than in the past to scenarios in which nuclear exchanges continue on for days, weeks, or even months?

What is the basis for assuming that nuclear wars are likely to be of long endurance?

What is the concept of employment of the different components of American nuclear forces during a nuclear war of long duration?

Is the Administration's interest in deep underground basin for ICBMs related to a need for a long enduring retaliatory weapons?

Answer. The qualities of endurance and survivability have long been recognized as being an essential part of a credible deterrent strategy. The Reagan Administration is, however, placing greater emphasis on obtaining enduring systems and supporting C^3 to ensure that we are capable of retaliating with overwhelming strength under all circumstances.

We put a great deal of stress on this and we think this is a very important part of our broader and balanced deterrence posture.

The reasoning is that we want to deny Soviet planners who may design an attack, either for a peak crisis or for an attack out of the blue, every possible avenue of thinking whereby they could expect to obtain an advantage by initiating nuclear war.

One great concern by a number of thoughtful analysts who have followed Soviet programs is that they might plan on a massive, quick, initial surprise attack which would to a large extent disarm us of some of our more vulnerable systems, and then leave the United States with such a disorganized capability of residual offensive arms and a largely disabled command and control and communications system that there could be no more response that would serve a purpose, or that further response could be deterred by the remaining Soviet weaponry.

It has been feared that this kind of planning might be combined with the utilization of the rather advanced Soviet civil defense system, permitting the evacuation of most of their urban populations so that they could either deter, or if they can't really deter and disarm the retaliatory strike, survive part of it, and then return as the only nuclear power on Earth and dominate the outcome of such a horrible war.

It is in order to foreclose that thinking, however important it may be in Soviet plans—and there are indications it has gained some importance over the last ten or 20 years—that we wanted during survival, that is to say, we want to close the last door to any half-way rational Soviet plan for initiating war.

SLCM

Senator **Warner**. Dr. Ikle, have you addressed yourself to the possible arms control implications of deploying long-range sea-launched cruise missiles equipped with nuclear warheads for strategic missions aboard attack submarines? Have you considered any adverse impact which may result as a consequence of these tactical warfare assets being diverted from their primary mission to perform SIOP roles and due to their tactical warfare weapons load-out being degraded?

Answer. With regard to arms control, I would note that the deployment of nuclear-armed SLCMs will occur well after the SALT II Protocol would have expired, had that Treaty come into force. Hence the deployment would have been consistent with the terms of that Treaty. With regard to future arms control efforts, and the concern heard in some quarters that deployment of nuclear SLCM's will complicate vertification of a future agreement, I would note the following. First, the Soviets have already deployed large numbers of cruise missiles on their submarines and surface ships. To the extent that a problem exists, or will exist, it is already there and not of US making. Second, there is implicit in this concern the assumption that if we do not deploy certain weapons systems, then the Soviets won't deploy them either. There is no basis for such an assumption. On the contrary, the Soviets give every evidence of deploying the systems they regard as serving their interests, regardless of U.S. actions, and despite our forebearance. With regard to your second point, our deployment of nuclear SLCMs will be done in such a manner as not to affect adversely the tactical warfare capabilities of the launch platforms.

ENVIRONMENTAL CONCERNS

Senator WARNER. Can you discuss the degree to which concerns about environmentally-related opposition and possible litigation influenced the decision not to proceed with an M–X/MPS basing in the Great Basin Region? Were such concerns totally absent from the policy-making deliberations? Do you intend to take steps to streamline the environmental impact review process as it may relate to alternative M–X basing schemes such as reconstructed Minuteman silos or deep undergraund basing?

ANSWER. The serious environmental impact of MPS basing and the concerns of the affected citizens were of course in our minds. However, at all times we believed that if President Reagan told the people in the deployment areas that he was absolutely convinced MPS basing was necessary and that his defense experts were convinced it was much better than any other system, opposition would have melted away. Therefore, the environmentally-related opposition and threats of litigation did not loom large in our thinking. The fact is that the President and his advisors did not conclude that MPS was in the best interests of the national security.

We are a long way from making any decision about whether it will be necessary to streamline the environmental impact review process for any future basing decision.

ALTERNATIVES WITHIN THE STRATEGIC MODERNIZATION PLAN

Senator WARNER. Dr. Ikle, Dr. Wade, you have described how different strategic programs should work together, but could you explain why we could not do as well with the Advanced Technology Bomber rather than the B–1 and do much better with some form of M–X/MPS rather than doing only the uncertain R&D initiatives such as Deep Underground Basing and the Long Endurance Aircraft. This last point would seem to be very important in light of the recent Defense Science Board conclusion that Ballistic Missile Defense could be greatly enhanced by deceptive basing such as MPS.

ANSWER. The B–1 is needed because it is here and now. It will provide us predictable and very useful performance at a predictable time and at a predictable cost. The ATB is a great hope for the nation's defense in the future, but at this point we cannot write down its characteristics, schedule, or costs. On M–X basing, there is no question that in principle deceptive basing makes the job of ballistic missile defense easier. In the future we will consider various types of deceptive basing for ICBM's and/or for their defending interceptors. However, these will be system concepts optimized from the beginning for integration of ICBM's and active defenses.

QUESTIONS SUBMITTED BY SENATOR DAN QUAYLE

Senator QUAYLE. In view of our ICBM vulnerability, to what extent are we prepared to rely on a launch-under-attack posture? If we wished to, could we adopt such a posture successfully?

ANSWER. U.S. strategic forces have the capability to retaliate successfully under any conditions. The Reagan strategic program will strengthen this. While we cannot afford to rely on "launch on warning" or "launch under attack" as the solution to ICBM vulnerability, the Soviets cannot ignore our capability to do so, and must account for it in their own calculations.

Senator QUAYLE. Since the President came out with his strategic package, some members of Congress have argued that we should build either the MX or the Trident II, but not both, since they are both hard target hitters. Could you comment on why both of these systems are needed?

ANSWER. Our decision to proceed with the MX and with the Trident II is based on our determination to strengthen and modernize all three legs of our strategic Triad. The MX in a survivable deployment mode will enable us to maintain our ICBM force into the next century. The Trident II will enhance the sea-based leg of our strategic forces. The fact that each system among its other attributes is capable of attacking hardened targets is important, but it should not divert attention from the reasons which led to the development of MX and Trident II, i.e., to insure that our ICBM and SLBM forces remain an effective part of our deterrent.

Senator QUAYLE. To date the strategic Triad has served us well, but in view of the growing vulnerabilities of our land-based force, I wonder if the Triad has outlived its useful life. Could you comment on this?

ANSWER. We continue to believe that the Triad provides an effective means of complicating Soviet attack planning. A multiplicity of systems also causes the Soviets to spend defense resources on a wide variety of defensive systems, and provides a hedge against a single technological development which would threaten the viability of our deterrent policy.

QUESTIONS SUBMITTED BY SENATOR SAM NUNN

POLICY CHANGES

Senator NUNN. Dr. Ikle, what are the shifts or changes in policy that accompany President Reagan's strategic nuclear modernization program? Are fundamental elements of the strategic Triad being altered?

ANSWER. The Reagan program does not represent any major shift in U.S. policy—except that, unlike our predecessors, we are now procuring the kinds of forces we need to support our policy effectively. The Reagan program will insure the continued viability of the Triad including ICBMs in a survivable basing mode.

STRATEGIC BALANCE GOAL

Senator NUNN. Dr. Ikle, what comparative level of the U.S.-U.S.S.R. strategic nuclear balance is this new modernization program designed to meet and when will it achieve this objective?—(e.g., parity? essential equivalence? superiority?)

ANSWER. The President's strategic modernization decision is designed to restore a margin of safety which has been eroded by the continuing and ambitious Soviet build-up. It is designed to restore the strategic balance, to regain survivability for our strategic forces in the years ahead, and thereby to enhance the credibility of deterrence. It is not designed to achieve strategic superiority.

LAUNCH ON WARNING

Senator NUNN. Dr. Ikle, some who advocated replacing the MX/MPS system with basing in existing silos (hardened or not) stated this should be coupled with a "launch on warning" or "launch under attack" concept. Are these concepts part of the hardened silo basing concept and what does this mean for strategic stability? In your view, does a launch under attack posture lower the nuclear threshold and risk conflict escalation?

ANSWER. U.S. strategic forces have the capability to retaliate successfully under any conditions. The Reagan strategic program will strengthen this. While we cannot afford to rely on "launch on warning" or "launch under attack" as the solution to ICBM vulnerability, the Soviets cannot ignore our capability to do so, and must account for it in their own calculations.

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Senator NUNN. Dr. Ikle, how does the new Reagan strategic program relate to the countervailing strategy as outlined in former President Carter's PD–59 directive? Is this directive being revised or is DoD still operating under these guidelines? What aspects of the Reagan strategic program provides the options and flexibility that avoids presenting a President with only a "massive retaliation" response that threatens Soviet cities?

ANSWER. The Reagan strategic modernization program will ensure that we are able to hold at risk a wide array of Soviet targets. Our program will also insure that the President will have the maximum degree of flexibility possible by enhancing the survivability, endurance, and, most importantly the command, control, and communications of our strategic forces.

NUCLEAR WAR FIGHTING

Senator NUNN. Dr. Ikle, does the new Reagan strategic program support a nuclear war-fighting, war-winning strategy? Would you agree or disagree with former Secretary of Defense Harold Brown's statement in the fiscal year 1982 posture statement that "countervailing strategy does not assume, or assert, that we can 'win' a limited nuclear war, nor does it pretend to enable us to do so?"

ANSWER. As President Reagan stated a few weeks ago, "any use of nuclear weapons would have the most profound consequences. In a nuclear war, all mankind would lose." U.S. nuclear policy is designed to insure that no aggressor could reasonably believe that it could use nuclear weapons—on whatever scale—to achieve its goals.

EFFECT OF MX ON POST-EXCHANGE BALANCES

Senator NUNN. Dr. Ikle, in his fiscal year 1982 posture statement former Secretary Brown included several charts which reveal the special contributions in the late 1980s that MX in a survivable basing mode would make to post-exchange ratios under the adverse day-to-day alert conditions. Secretary Brown argued that under SALT II limitations it was MX that gives the U.S. a post-exchange warhead advantage in the latter half of the decade. Without SALT II, Brown stated that MX is needed to reverse the adverse post-exchange warhead trend. He stated further that MX/MPS forces the Soviets to make difficult choices between allocating a large number of ICBM warheads against MX shelters and employing them against other targets. Do you agree with the line of thinking as evidenced by Dr. Brown's above-cited statements?

ANSWER. The Soviets have to make difficult targeting choices only if they are constrained in the number of missiles or warheads they can deploy. Since they are not constrained, we believed that they could deploy missiles as fast or faster than we could deploy MX shelters for them to shoot at, and we would enjoy no economic leverage.

Even if we deployed a much larger MX shelter system than the baseline 4600, as was assumed in Dr. Brown's "Reactive MX Without SALT II Limits" case, we could not assure any meaningful level of ICBM survivability.

STRATEGIC RESERVES

Senator NUNN. Dr. Ikle, does the Reagan strategic program envision a larger role for strategic reserve forces and reconstitutable nuclear forces? How important are survivability and endurance to preserving our strategic reserve forces?

ANSWER. Our strategic reserve forces are those elements of our strategic deterrent that could be withheld to deter follow-up Soviet attack on the U.S. and its allies. Given this role, survivability and endurance are essential qualities for our strategic reserve forces. The same qualities are essential for the C^3I systems which we rely on to support the strategic reserve. As I noted earlier, the Reagan strategic program does not represent any major shift in policy with regard to this or any other element of our strategic forces. Unlike our predecessors, however, we are now procuring the kinds of forces we need to support our policy effectively.

UNITED STATES AND SOVIET HARD TARGET KILL POTENTIAL

Senator NUNN. Dr. Ikle, what are the trends in terms of Soviet improvements in time urgent hard target kill potential?

General Jones included a chart in his fiscal year 1982 unclassified posture statement indicating almost a 4:1 Soviet advantage in 1986.

What does the Reagan program include to reverse this trend.

ANSWER. The Soviets today enjoy a 2.3:1 advantage in prompt hard target kill potential. In 1990, depending on the threat assumed, the Soviets are expected to enjoy a 2–3.9:1 advantage, even though U.S. prompt hard target capability will increase by almost a factor of three over the period 1981–1990. When total hard target potential is considered, neither side has an advantage today; in 1990, either the U.S. or the USSR will enjoy about a 1.3:1 advantage depending on which estimate of 1990 Soviet capabilities is used. After 1986 the Reagan program will have an open MX missile production line, and after 1989, an open Trident II (D-5) missile production line to further expand our prompt hard target capability beyond current plans if that proves to be needed.

B-1B FLEXIBILITY

Senator NUNN. Mr. Jones, could you describe for the committee your views on the justification and operational concept for the B-1B as provided to committee staff in a briefing several weeks ago?

I was informed that you stated the B–1B could not be justified solely on its penetration capability but on an operational concept that required three missions against the Soviet Union (the first two in a standoff role and the last in a penetrating mode). Is this correct?

Mr. JONES. The B–1B will be a very capable aircraft across the broad spectrum of missions required for a strategic bomber including nuclear weapons delivery, cruise missile carriage and conventional operations. Aside or equally important to its capability to perform these missions and replace the aging B–52, it has inherent capability to provide deterrence in flexible strategic warfare. Because of far better dispersal characteristics and the ability of the B–1B to locate and strike nonpreplanned or imprecisely known targets, it will provide a unique capability in an area that the Soviet Union continues to develop capabilities.

The ability to strike preplanned and known targets can be performed by a manned bomber or a less costly ALCM; however, the ALCM cannot strike targets that have moved or are inherently mobile. A manned bomber can be held in reserve at a dispersed location or initially be used to launch cruise missiles and then be used to strike meaningful targets as the conflict progresses.

BOMBER DISPERSAL

Senator NUNN. What is your concept for bomber dispersal business?

Mr. JONES. Existing bombers are becoming increasingly vulnerable to attack by Soviet SLBMs and are certainly not enduring as strategic reserve assets or for follow-on use if the aircraft must operate from the relatively few main operating bases.

Accordingly, to lessen the incentive for a surprise attack and to increase deterrence by our ability to conduct extended nuclear warfare, bombers must be survivable. Dispersed basing, essentially the capability to operate from many hundreds of small runways, can accomplish these objectives.

DISPERSED BASING FEASIBILITY

Senator NUNN. Has the Strategic Air Command provided any operational analysis of your plan or comments on the feasibility?

Mr. JONES. Prior to the 1977 decision not to deploy the B–1, SAC had accomplished considerable analysis in the survivability and strategic reserve force areas. Recently, additional analysis has been accomplished which again substantiate the enduring qualities of a B–1B. SAC has completed Phase I of a major initiative and follow-on activities are scheduled for completion by May 1982.

B–1B FLEXIBILITY

Senator NUNN. Dr. Ikle, do you agree with Mr. Jones' concepts for the B–1?

Dr. IKLE. I agree with Mr. Jones in that we must increase the survivability of the bomber force and exploit its unique ability to deter either initial or prolonged nuclear conflict. Due to escape, dispersal and penetration qualities, the B–1B can significantly enhance our capability to accomplish these objectives.

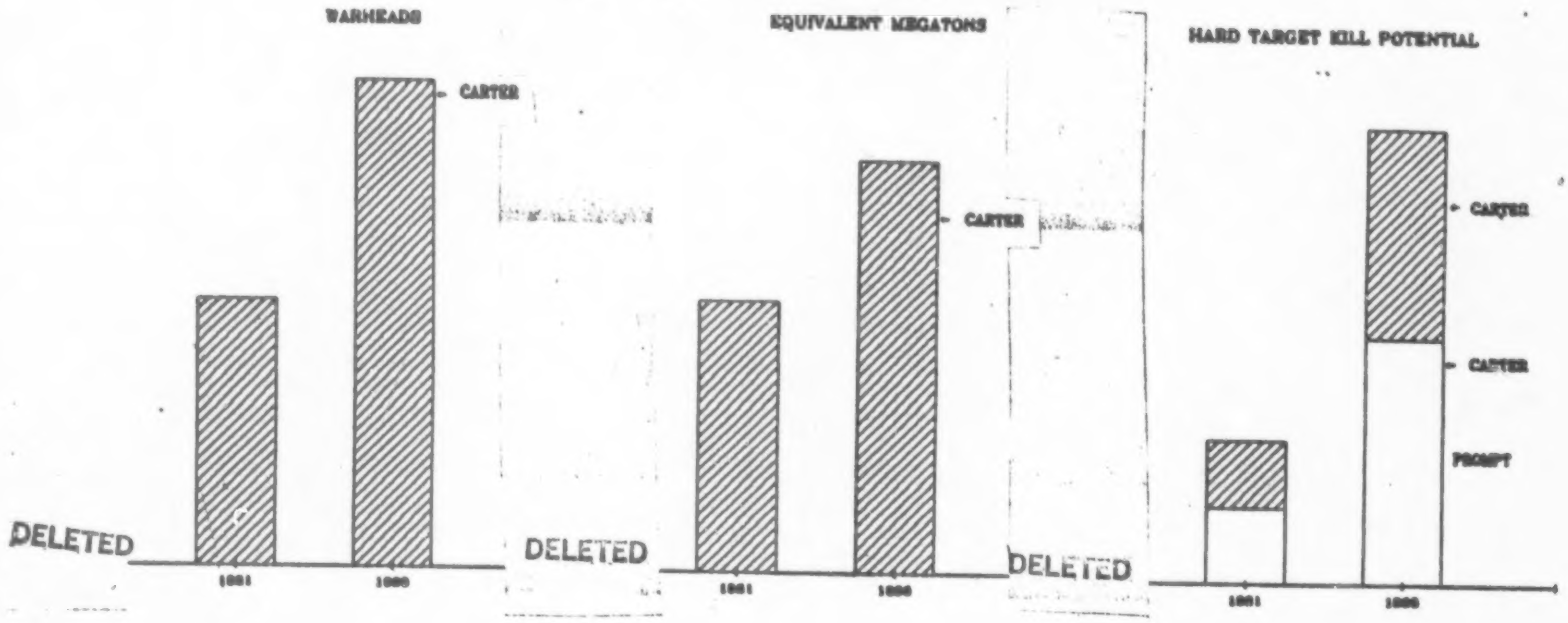
STATIC MEASURES OF CARTER AND REAGAN PROGRAMS

Senator NUNN. Dr. Ikle, in terms of static measurements, how do the Carter and Reagan plans compare to include weapons, delivery vehicles, megatonnage, time-urgent hard target kill, counter-military potential, equivalent megatonnage and other measures?

ANSWER. The attached charts compare the Reagan and Carter programs in terms of warheads, equivalent megatonnage and hard target kill potential (prompt and total) following a Soviet first strike. The calculation includes the expected pre-launch survivability of U.S. forces, their reliability and their probability to penetrate Soviet defenses.

INDICES OF SURVIVING U.S. CAPABILITIES AFTER A SOVIET FIRST STRIKE*

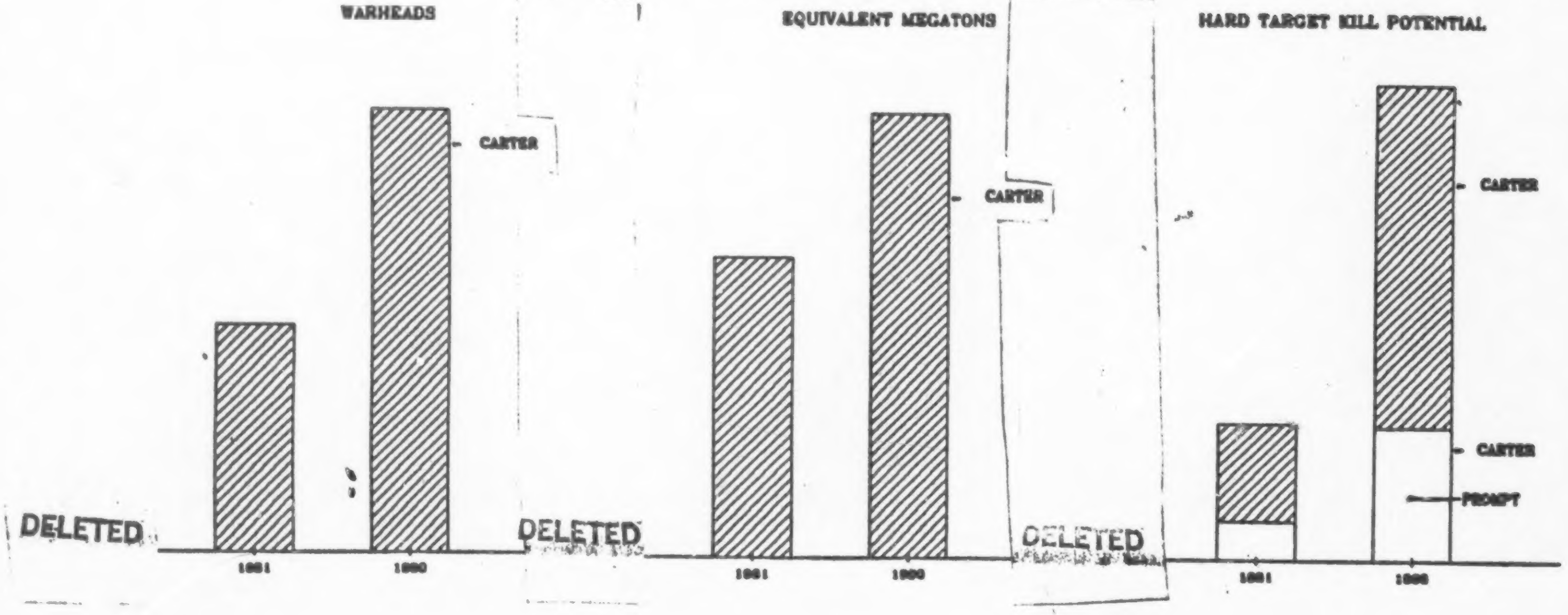
(U.S. FORCES ON PEACETIME ALERT)



*Includes prelaunch survivability, reliability, and the ability to penetrate defenses.

INDICES OF SURVIVING U.S. CAPABILITIES AFTER A SOVIET FIRST STRIKE*

(U.S. FORCES FULLY GENERATED)



*Includes prelaunch survivability, reliability, and the ability to penetrate defenses.

B–52D RETIREMENT: WEAPONS AND MEGATONS

Senator NUNN. Dr. Ikle, what percentage of the total number of weapons and available megatonnage will retirement of the B–52s represent?

What are the same measurements for the Titan missile force?

What is the total percentage of the number of weapons and megatonnage represented in the B–52D and Titan retirement as planned in the Reagan program?

When will these decreases be replaced? Does it make sense to replace or offset these decreases either before they are taken or at least at the same time?

ANSWER. In terms of our 1987 capabilities, when all B–52Ds and Titans would be retired from the Strategic inventory, the 75 B–52Ds would represent [deleted] percent of our warheads [deleted] percent of our equivalent megatonnage available under generated alert conditions before a Soviet first strike. 52 Titan IIs would represent less than [deleted] percent of our warheads and about [deleted] percent of our equivalent megatonnage in terms of preattack measures in the same year. Retaining these two older systems would add less than [deleted] percent more warheads [deleted] percent more equivalent megatonnage to the planned 1987 arsenal.

Current plans would add more than [deleted] times as many on-line warheads to the arsenal in fiscal year 1983 as are planned for retirement in that year. By 1987, [deleted] times as many warheads will have been added as are planned for retirement. Equivalent megatonnage will be added to the force somewhat more slowly, although by 1987, when the B–52D and Titan II retirements are complete, more than [deleted] times as much equivalent megatonnage will have been added to the force as is planned for retirement.

The decision to retire these aging and costly systems on the schedule proposed, especially in view of the planned force modernization, makes good sense. Moreover, we do not feel obligated to maintain such costly forces merely to maintain the appearance of force capabilities more effective than we actually possess.

CRUISE MISSILE PROGRAM

Senator NUNN. Dr. Ikle, can you provide the committee with a complete picture of the Reagan cruise missile program as compared to that envisioned in the Carter fiscal year 1982 and 5-year program to include respective time frames?

How many advanced technology cruise missiles were in the Carter program? How many are included in the new Reagan program?

Dr. IKLE. The cruise missile efforts in both the Carter and Reagan programs included the Air Launched, Ground and Sea Launched cruise missiles as well as advanced cruise missile technology efforts.

The fiscal year 1982 Carter program would procure a total of [deleted] ALCMs wheres the current program is recommending a procurement of [deleted] PAA ALCMs or a total buy of over [deleted].

Both the Reagan and Carter programs support the December 1979 NATO Ministers' decision which procures [deleted] PAA GLCMs or a total buy of [deleted] missiles.

Both the Reagan and Carter programs supported procurement of the conventionally armed land attack and antiship Tomahawk sea launched cruise missiles. While the Carter program supported continued development of the sea launched nuclear land attack variant, no procurement was budgeted in the near term. However, the Reagan program supports procurement of [deleted] nuclear land attack SLCMs starting in 1984 which will have both strategic reserve and worldwide Theater Nuclear Force roles.

SCLM

Senator NUNN. Dr. Ikle, have you addressed yourself to the possible arms control implications of deploying long-range sea-launched cruise missiles equipped with nuclear warheads for strategic missions aboard attack submarines? Have you considered any adverse impact which may result as a consequence of these tactical warfare assets being diverted from their primary mission to perform SIOP roles and due to their tactical warfare weapons load-out being degraded?

ANSWER. With regard to arms control, I would note that the deployment of nuclear-armed SLCM's will occur well after the SALT II Protocol would have expired, had that Treaty come into force. Hence the deployment would have been consistent with the terms of that Treaty. With regard to future arms control efforts, and the concern heard in some quarters that deployment of nuclear SLCMs will complicate verification of a future agreement, I would note the following. First, the Soviets have already deployed large numbers of cruise missiles on their submarines and surface ships. To the extent that a problem exists, or will exist, it is already there and not of U.S. making. Second, there is implicit in this concern the assumption that if we do not deploy certain weapons systems, then the Soviets won't deploy them either. There is no basis for such an assumption. On the contrary, the Soviets give every evidence of deploying the systems they regard as serving their interests, regardless of U.S. actions, and despite our forbearance. With regard to your second point, our deployment of nuclear SLCMs will be done in such a manner as not to affect adversely thc tactical warfare capabilities of the launch platforms.

ENDURING NUCLEAR WAR

Senator NUNN. Dr. Ikle, recent press accounts have suggested that a major policy element in President Reagan's strategic modernization program is the emphasis on being able to conduct an "enduring nuclear war," a war that lasts days, weeks, and months. "Endurance" according to this concept would be more than the ability of weapons systems and C^3 to ride out an initial attack, it would involve the ability of the United States to reconstitute its forces again and again over long periods punctuated by nuclear attack.

Is there a Reagan Administration policy which gives greater priority than in the past to scenarios in which nuclear exchanges continue on for days, weeks, or even months?

What is the basis for assuming that nuclear wars are likely to be of long endurance?

What is the concept of employment of the different components of American nuclear forces during a nuclear war of long duration?

Is the administration's interest in deep underground basing for ICBMs related to a need for long enduring retaliatory weapons?

ANSWER. The qualities of endurance and survivability have long been recognized as being an essential part of a credible deterrent strategy. The Reagan Administration is, however, placing greater emphasis on obtaining enduring systems and supporting $C^3$1 to ensure that we are capable of retaliating with overwhelming strength under all circumstances.

We put a great deal of stress on this and we think this is a very important part of our broader and balanced deterrence posture.

The reasoning is that we want to deny Soviet planners who may design an attack, either for a peak crisis or for an attack out of the blue, every possible avenue of thinking whereby they could expect to obtain an advantage by initiating nuclear war.

One great concern by a number of thoughtful analysts who have followed Soviet programs is that they might plan on a massive, quick, initial surprise attack which would to a large extent disarm us of some of our more vulnerable systems, and then leave the United States with such a disorganized capability of residual offensive arms and a largely disabled command and control and communications system that there could be no more response that would serve a purpose, or that further response could be deterred by the remaining Soviet weaponry.

It has been feared that this kind of planning might be combined with the utilization of the rather advanced Soviet civil defense system, permitting the evacuation of most of their urban populations so that they could either deter, or if they can't really deter and disarm the retaliatory strike, survive part of it, and then return as the only nucelar power on Earth and dominate the outcome of such a horrible war.

It is in order to foreclose that thinking, however important it may be in Soviet plans—and there are indications it has gained some importance over the last 10 or 20 years—that we want enduring survival, that is to say, we want to close the last door to any half-way rational Soviet plan for initiating war.

ENVIRONMENTAL CONCERNS

Senator NUNN. Can you discuss the degree to which concerns about environmentally-related opposition and possible litigation influenced the decision not to proceed with an MX/MPS basing in the Great Basin Region? Were such concerns totally absent from the policy-making deliberations? Do you intend to take steps to streamline the environmental impact review process as it may relate to alternative MX basing schemes such as reconstructed Minuteman silos or deep underground basing?

Answer. The serious environmental impact of MPS basing and the concerns of the affected citizens were of course in our minds. However, at all times we believed that if President Reagan told the people in the deployment areas that he was absolutely convinced MPS basing was necessary and that his defense experts were convinced it was much better than any other system, opposition would have melted away. Therefore, the environmentally-related opposition and threats of litigation did not loom large in our thinking. The fact is that the President and his advisors did not conclude that MPS was in the best interests of the national security.

We are a long way from making any decision about whether it will be necessary to streamline the environmental impact review process for any future basing decision.

ALTERNATIVES WITHIN THE STRATEGIC MODERNIZATION PLAN

Senator **Nunn.** Dr. Ikle, Dr. Wade, you have described how different strategic programs should work together, but could you explain why we could not do as well with the Advanced Technology Bomber rather than the B-1 and do much better with some form of MX/MPS rather than doing only the uncertain R. & D. initiatives such as Deep Underground Basing and the Long Endurance Aircraft. This last point would seem to be very important in light of the recent Defense Science Board conclusion that Ballistic Missile Defense could be greatly enhanced by deceptive basing such as MPS.

Answer. The B-1 is needed because it is here and now. It will provide us predictable and very useful performance at a predictable time and at predictable cost. The ATB is a great hope for the nation's defense in the future, but at this point we cannot write down its characteristics, schedule, or costs. On MX basing, there is no question that in principle deceptive basing makes the job of ballistic missile defense easier. In the future we will consider various types of deceptive basing for ICBM's and/or for their defending interceptors. However, these will be system concepts optimized from the beginning for integration of ICBM's and active defenses.

Senator **Quayle.** The meeting will stand adjourned.

[Whereupon, at 11:10 a.m. the committee was adjourned subject to the call of the Chair.]

STRATEGIC FORCE MODERNIZATION PROGRAMS

WEDNESDAY, OCTOBER 28, 1981

U.S. Senate,
Subcommittee on Strategic and
Theater Nuclear Forces,
Committee on Armed Services,
Washington, D.C.

STRATEGIC PROGRAMING AND BUDGETING

The subcommittee met in open session pursuant to notice at 9 a.m., in room 212, Russell Senate Office Building, Senator John W. Warner, chairman, presiding.

Present: Senators Warner, Jackson, and Levin.

Staff present: Frank J. Gaffney, professional staff members; Francis J. Sullivan, minority staff director; Brenda K. Hudson, assistant chief clerk; Ronald F. Lehman, José E. Martinez, E. George Riedel, professional staff members; and Mary A. Shields, staff assistant.

Also present: Dennis P. Sharon, assistant to Senator Goldwater; Buzz Hefti, assistant to Senator Warner; Jim Dykstra, assistant to Senator Cohen; Robert Nichols, assistant to Senator Jackson; Frank Krebs, assistant to Senator Cannon; Arnold Punaro, assistant to Senator Nunn; Greg Pallas, assistant to Senator Exon; and Peter Lennon, assistant to Senator Levin.

OPENING STATEMENT BY SENATOR JOHN W. WARNER, CHAIRMAN

Senator Warner. I tender my apologies to one and all. Last night I was selected to do an early segment on the Today show, from the viewpoint of the President's position on AWACS, and then go to another station to do another segment. I just felt that priority, in the interest of the administration had to be met, and I apologize.

We begin our third hearing this morning on the Reagan strategic modernization program. On Monday we received testimony on the strategic nuclear threat posed by the Soviet Union.

Yesterday, the subcommittee received testimony on the strategic doctrines and defense policies which provide the framework within which the strategic modernization package will operate. Now we must begin the task of getting down to details.

The Reagan administration proposes a two-bomber program—both the B-1 and an advanced-technology bomber.

Our questions are many: What modifications will be made to the B-1 bomber and what will they cost? What weapons will be placed upon our new strategic bombers, and when will the existing B-52 aircraft be retired?

We have heard the B-1 bomber program described as a $20-billion program but I have no doubt that the total cost of the program as funded is larger. We also need to establish whether or not there are expenses related to the B-1 decision which have not been funded. The administration has stressed its emphasis on air-launched cruise missiles, and I think it will be important to establish today exactly how many ALCM's will be deployed and on what aircraft.

The administration speaks of stabilizing our procurement of *Ohio*-class submarines. In fact, relative to the unattained promises of past administrations, this is a cutback in ballistic missile submarine procurement.

The administration has announced that it will proceed with the D-5 Trident II missile. We support that action but need to establish today that this is, in fact, a program which leads to the kinds of hard-target kill capability at sea which the committee envisions.

This committee has long felt that not enough attention was being paid to sea-launched cruise missiles, SLCM's. To its credit, the administration proposes an enhanced SLCM program. Now, we need to know exactly how many SLCM's will be deployed with nuclear weapons and upon how many submarines. Furthermore, we need to have a better understanding of how nuclear-armed SLCM's will be integrated into the single integrated operations plan, SIOP.

The controversy surrounding the administration's MX basing proposal remains. The administration witnesses have testified that no decision has been made on precisely where to build superhardened silos; no number of silos has been established; no design exists for these superhardened silos; and no precise cost estimates are available.

At the present time, we do not even know if there is sufficient funding for MX basing in the President's amended fiscal year 1982 request to achieve an IOC of 1986 for the MX missile in superhardened silos.

Administration witnesses have testified that no cost-effectiveness studies exist which can be presented to the Congress to justify confidence in such form of MX basing options as the deep underground missile and the Big Bird, long-endurance aircraft.

Great attention has been paid, correctly, to strategic communications and control systems in the Reagan strategic plan. Many of the initiatives being proposed have suffered from inadequate funding in the past; however, much of the Reagan C^3 program involves redundant communications aimed at providing greater survivability throughout a nuclear war of relatively long duration.

Today we seek a justification for these requirements and anticipate that new, innovative approaches will also be discussed.

The President proposes enhanced civil and air defenses. We have been given some idea of the magnitude of the air defense program which is proposed but not a detailed justification. We hope to establish that today. Thus far we have not received a programmatic survey of the President's civil defense initiatives. My hope is that this area of strategic defense will be clarified today with regard to the program and its costs.

I have raised many questions in these remarks, but then that is the purpose of our hearings. My colleagues in the Senate and the American people want more information about the President's strategic proposals.

The fact that we are engaged in a House/Senate conference on the fiscal year 1982 defense authorization bill makes it necessary that we expedite these hearings because decisions with respect to major strategic programs such as the B-1 bomber and the MX missile must be made in the next few weeks.

To provide this subcommittee the kind of detail which has traditionally been necessary to justify an administration's defense program, I wish to welcome Hon. Jack R. Borsting, Assistant Secretary of Defense (Comptroller); Dr. James P. Wade, Jr., Principal Deputy Under Secretary of Defense for Research and Engineering; T. K. Jones, Deputy Under Secretary of Defense (Strategic and Theater Nuclear Forces); and Donald C. Latham, Deputy Under Secretary of Defense (Command Control, Communications and Intelligence).

We will commence this morning with an opening statement by Dr. James P. Wade, Jr.

STATEMENT OF HON. JAMES P. WADE, JR., PRINCIPAL DEPUTY UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING, ACCOMPANIED BY HON. JACK R. BORSTING, ASSISTANT SECRETARY OF DEFENSE (COMPTROLLER); T. K. JONES, DEPUTY UNDER SECRETARY OF DEFENSE (STRATEGIC AND THEATER NUCLEAR FORCES); AND DONALD C. LATHAM, DEPUTY UNDER SECRETARY OF DEFENSE (COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE)

Dr. WADE. Good morning, Mr. Chairman and members of the Subcommittee on Strategic and Theater Nuclear Forces. It is a pleasure to return this morning to continue our discussions of the Reagan administration's program for revitalizing our strategic deterrent.

As you know, the question of how best to modernize our strategic forces has been perhaps the most important issue that this administration has faced. In deciding how to proceed, the administration faced a number of difficult choices. Perhaps the most fundamental and important of these was whether to match the enormous destructive power of the Soviet nuclear arsenal or to focus on improving survivability and endurance of our own forces.

Our decision that the major thrust of our efforts would be directed at survivability rather than destructive power was driven by several factors: Instability—incentive to strike first in a crisis, and incentive for surprise attack—should be reduced; imbalances should be redressed at less cost and with fewer nuclear weapons; should deterrence fail, a conflict should limit itself to a lower intensity; and the resulting posture should be more conducive to negotiated reductions.

Thus the program the President has approved does not seek per se to increase warheads but, rather, to improve the effectiveness of our strategic deterrent, to substitute improvements in command and control for major increases in force size, and to recognize that it is surviving and enduring forces which will best deter aggression.

Yesterday, the Under Secretary of Defense for Policy outlined some of the policy and operational considerations involved in our decisions.

This morning, I should like to concentrate on some of the details of the program itself.

It is important at the outset to recognize that the program President Reagan announced on October 2 is a comprehensive, integrated plan, the most far-reaching such effort since the Eisenhower administration. Indeed, in my judgment, the fact that this is an integrated package is more important than any single element.

The President's program consists of five mutually reinforcing elements and embodies our belief that we must maintain the strategic Triad and insure that each leg of that Triad is as strong and as survivable as possible.

The five elements are, first, improvement in command and control systems; second, modernization of strategic bombers so we retain the capability to penetrate Soviet air defenses by manned bombers; third, deployment of new submarine-launched missiles, in many ways the most survivable of all our systems; fourth, a step-by-step plan to improve the strength and accuracy of new land-based missiles and to reduce their vulnerability; and, fifth, improvement in strategic defenses as a fourth means of discouraging and deterring attack.

I should like to outline each element briefly.

COMMAND AND CONTROL

Perhaps no portion of the program is as important as the improvements we plan in command, control and communications, C^3. It will do us little good to modernize our forces if we do not also insure that we have the capability to intelligently control those forces and to communicate with them in peace and in war.

Over the past 10 years we have not done enough to make our command, control, and communications systems as capable, as survivable, and as enduring as they must be. Our new program begins to redress this problem. Our goal is to make these systems as enduring and capable as the forces they support.

To improve our strategic warning capability, we will upgrade the survivability of our warning satellites and deploy mobile ground terminals to back up our data processing capability for these satellites. Mobile systems such as these can be virtually impossible for the Soviets to target.

Additionally, both our satellite and ground-based radar warning systems will be improved so we could obtain more definite warning should an attack occur. Surveillance radars, which would help us to detect, for example, an SLBM attack, will be added to cover potential submarine operating areas to the Southeast and Southwest.

To upgrade the capability and survivability of command and control we will deploy E-48 airborne command posts to serve the National Command Authority, NCA, in time of war, and harden existing EC-135 airborne command posts against nuclear effects in order to better serve our military commanders in the field. The EC-135's will also receive additional enhancements in their ability to communicate with both the NCA and strategic forces.

We will develop a new satellite communications system employing extremely high frequency channels so the President's order can be passed from command centers to our commanders and their forces. Our bombers will receive very low frequency and low frequency communications receivers to enhance their ability to communicate with command centers.

Our deployed submarines will also receive an upgraded communications package. At the same time, we will be initiating a vigorous and large R. & D. program leading to a command and control system which will endure for an extended period beyond any initial nuclear attack.

BOMBER FORCES

The previous administration was willing to live with the risks of an aging B–52 force for the eighties and the uncertain schedule and unproven capabilities of an advanced-technology bomber, ATB or Stealth, for the nineties. We have chosen a far less risky course in a field where the margin for error is exceedingly small.

Our program will provide much-needed capability in the eighties and will respond to the congressional mandate to field a new bomber by 1987. It also provides the management to produce as soon as possible the best and least costly advanced-technology bomber which should give us significant advantages into the next century.

Specifically, we will develop a force of 100 B–1 variant (B–1B) bombers with an initial operating capability, IOC, in 1986. This highly capable aircraft will have the ability of serving a dual role as a more survivable and enduring cruise missile and penetrator weapon platform as we develop the ATB.

Our vigorous ATB program will lead to that plane's deployment in the early nineties. We will modernize a selected portion of our newer B–52's to carry cruise missiles and make them more survivable overall.

The older B–52D's will be retired in 1982 and 1983.

A force of over 3,000 cruise missiles will be deployed beginning next year, in B–52G's and thereafter the "H's" and the B–1 aircraft.

Finally, existing KC–135 aerial tankers will be outfitted with new engines to increase our airborne refueling capabilities.

The two-bomber approach of the administration's program will not only provide capability when needed but also will help in controlling costs by stimulating competition, allowing for flexible procurement policies and providing the B–1 for use as a cruise-missile carrier for the 1990's, instead of another yet-to-be-developed aircraft.

SEA-BASED FORCES

The cornerstone of our program for the sea-based forces is the development of the more accurate submarine-launched ballistic missile, SLBM, known as the D–5, or Trident II missile. This missile, which we will deploy in 1989, nearly doubles the payload of its predecessor, the C–4, and is more accurate as well. We thus maintain our sea-based capabilities when large numbers of older Poseidon submarines retire in the 1990's.

At the same time, we provide the additional targeting capabilities that come with a more accurate missile. We plan to continue construction of the Trident ballistic-missile submarines at a steady rate of one per year. The lead Trident has had a highly successful series of sea trials and will be delivered to the Navy today and commissioned in about 2 weeks. With most of the construction difficulties of the past resolved, we now look forward to a highly successful program.

In addition to our longer term plans, we will deploy several hundred nuclear-armed, sea-launched cruise missiles on our general-purpose submarines beginning in 1984. These missiles will serve to strengthen our deterrent by enhancing our Strategic Reserve Force. More to the point, they represent a near-term improvement in our deployed capability and thus speed the closing of the window of vulnerability of which the President and the Secretary of Defense have spoken.

LAND-BASED MISSILES

The multiple protective shelter, MPS, basing scheme for the MX missile has been canceled. This administration's judgment is that the MPS concept has serious military drawbacks while not solving the basic problem of current survivability of the Minuteman and the Titan force.

The system of 200 missiles and 4,600 shelters envisioned previously would not have been survivable against even the worst threat allowed by SALT II without constructing many more shelters and/or adding ballistic missile defense. Without a clear technical foundation for add-on capability, we could have been in the position in the mid-1980's of having sunk many billions of dollars in an MPS system and staked the future of our ICBM's on a system that was somewhat hostage to SALT.

The Soviets would have no incentive to help us and we might be forced to make major concessions in other areas just to keep MX viable.

In place of the discarded MPS basing scheme, we will embark on a step-by-step approach to modernizing our ICBM forces.

First, we will continue development of the MX missile, procuring at least 100 operational missiles and deploying some fraction of them in existing Titan or Minuteman III silos which have been modified to provide for improved hardness. This deployment gives us a short-term improvement in our existing ICBM force. It is an interim way of breaking the Soviet monopoly on prompt hard-target counterforce capability until the D–5 and the more permanent MX deployments become operational. It also provides a vastly stronger and more accurate weapon with 10 warheads for the Soviets to consider in their own strategic calculations.

Meanwhile, we will pursue R. & D. on three promising programs which would give us survivable MX basing for a much longer period. These are:

(a) Continuous airborne patrol aircraft—development of a long-enduring aircraft which could carry and launch an MX missile.

(b) Ballistic missile defense of land-based missiles—the development of an ABM system to provide protective coverage and survivability of land-based ICBM's.

(c) Deep underground basing and placement on the south side of mesas—the hardening of MX silos to survive all but a direct hit, and placement of silos in a manner designed to protect them against existing Soviet targeting.

We expect to choose one, or, more likely, several, of these options by 1984.

The final aspect of our ICBM modernization efforts involves the orderly phasing out of the Titan missile force.

STRATEGIC DEFENSE

The final element of the Reagan administration's program involves our plans for significantly upgrading our long neglected strategic defense system. These forces and sensors have been virtually ignored for over a decade. As a result, we have large gaps in the North American air defense network, obsolete air defense interceptors and antisatellite and ballistic-missile defense R. & D. programs that have truly fallen behind the Soviets.

Our program is multifaceted. It will improve air surveillance in coordination with Canada by deploying a combination of our over-the-horizon backscatter, OTH–B, radars and improved versions of existing radars; and development efforts toward more enduring sensors will be started.

We will replace five squadrons of aging F–106 interceptors with new F–15's and buy at least six AWACS aircraft for peacetime and wartime surveillance and interceptor control.

We will continue to pursue an operational antisatellite system.

Finally, an expanded but cost-effective civil defense program will be developed in coordination with the Federal Emergency Management Agency.

BUDGET AND COSTS

I consider the elimination of the growing window of vulnerability of such high priority that it would be worth almost any amount of money. There can be no pricetag on national survival. But we need not face such stark choices, for our strategic modernization program is affordable, even within the reduced spending levels mandated by the President's economic recovery program.

As the President noted in announcing his strategic decision, the entire cost of maintaining and rebuilding our strategic forces over the next 5 years will consume less than 15 percent of our defense expenditure, considerably below the 20 percent spent on strategic arms in the 1960's during the last comparable modernization of our deterrent forces. Thus the program is clearly affordable.

In summary, this comprehensive program modernizes all elements of our strategic posture, commences the redressal of the existing imbalance with Soviet forces and signals both our resolve and our capability to counter further growth in Soviet power.

We believe we have used the unique opportunity presented to us in order to mold a strategic force that will meet the objectives of our national strategy and serve as an effective deterrent in the years to come.

This concludes my prepared remarks. I would be happy to answer any questions.

Senator WARNER. Thank you very much.

I understand that Secretary Borsting will soon be joining the Secretary of Defense in another hearing before an Appropriations Subcommittee. We will pose these questions and ask if the panel will answer them in a manner that you all decide among yourselves.

First, the B-1 cost, because of the reductions which have been made in the President's defense programs, it is even more important now that we understand the true cost implications of the B-1 bomber in the two-bomber program.

What programs are funded in the President's request other than the B-1 and related to the long range combat aircraft program and not publicly identified with it?

Dr. Wade. The breakdown addresses the bomber program in totality. If you would like me to break it down in detail, I can provide it for the record.

Senator Warner. I would suggest you do that.

[The information follows:]

B-1B COST INFORMATION

The core B-1B program for RDT&E and procurement of 100 aircraft with spares and baselevel support equipment is estimated at $19.7B. An additional $379M is budgeted in the proper other accounts for manufacturing facilities, manufacturing technology and component improvements. Flight simulators, which are normally budgeted in another account are under discussion but estimates will not be firm for a few years due to basing decisions; that is number of bases and whether all will be central operating or some will be dispersal with training at a main base.

The inclusion of the potential additions and items budgeted in other accounts but singularly caused by the B-1B will bring the program total to the order of $20.5B plus $400M budgeted in other accounts.

Senator Warner. We have an estimate of perhaps $1.5 to $3 billion for testing, certification, improvements, production technology, and facility improvement. Would you care to comment on our evaluation?

Dr. Borsting. Will you restate the question?

Senator Warner. We have a staff estimate of $1.5 to $3 billion for testing, certification, improvements, production technology, and facility improvement.

Dr. Borsting. This is for the B-1B?

Senator Warner. Yes.

Dr. Borsting. This would be the staff estimate for costs in addition to the basic estimate?

Senator Warner. That would be correct.

Dr. Borsting. Let me just answer a general question about the estimated B-1B program costs.

The figure that we used in presenting strategic options to the President was an order-of-magnitude estimate. This was a figure that the program manager initially came up with. We have worked with it and we have scrubbed certain things. For example, on multiyear contracting we feel that we can achieve some savings, and that was taken off the figure submitted by the project manager.

We have also said we did not think we would have as many engineering change orders as the Air Force estimate allowed for, and we reduced the program figure accordingly.

There have been about $1.7 billion of cost reductions factored into the current, still tenative estimates.

Our cost-analysis group and the Air Force are reviewing very carefully whether those savings can really be achieved.

Senator Warner. Are the weapons to be carried by the B–1 funded in the B–1 account?

Dr. Borsting. No, they would be funded separately. The cruise missiles, for example, would be funded in the cruise missile account.

Senator Warner. Then how much have you added to compensate for these weapons?

Dr. Borsting. To the B–1B cost, you mean?

Senator Warner. Yes.

Dr. Borsting. Well, for example, for additions to the B–1B for external and internal carriage, for the cruise missile we have added $800 million. That is the total cost for those modifications. It is not for the missiles themselves, but for the modifications so that the bombers can carry the cruise missiles.

Senator Warner. Well now, that would be incorporated in the B–1 figure itself?

Dr. Borsting. Yes.

Senator Warner. You are telling me—and we will go into design of the B–1 with another panel, although any of you who wish to comment may do so—what you are telling me is that you put $800 million to $1 billion in the B–1 account to make arrangements so it can be a cruise missile carrier; is that correct?

Dr. Borsting. Originally, some of the base-cost figures that have been given did not include that $800 million, and I am saying that any figures we would have now would include the $800 million.

Senator Warner. So that is pylons and electronics and release mechanisms and all of the other things?

Dr. Borsting. Yes.

Senator Warner. My question was, what about the weapon load that this system will carry, namely, the cruise missiles and perhaps iron bombs and all of the rest, where is that figure?

Dr. Borsting. Well, it would carry 22 cruise missiles, I believe 8 internally and 14 externally.

Jim, do you want to add to this?

Dr. Wade. As to specific loadouts, I would suggest we wait for closed hearings.

Senator Warner. Well, in terms of the types of weapons, but what about the dollar figure associated with the weapon load that would make this an effective system?

Dr. Borsting. By dollar figure you mean the total cost of the weapons themselves, all of the different weapons?

Senator Warner. Yes.

Dr. Borsting. I can give that to you and I don't have it with me.

[The information follows:]

B–1B WEAPONS

The B–1B will have the capability to carry varying weapon loads. Those range from 22 ALCMs, 24 SRAMs, 24 nuclear gravity weapons, such as B–83 and B–61. Conventional weapons' capability for carrying large numbers of MK–82/84 will also be in place at the IOC.

The nuclear weapons loading will vary depending upon the specific scenario for an individual bomber and the timing within the Single Integrated Operations

Plan (SIOP). Most likely the weapons loading will be mixed consisting of ALCM, SRAM and gravity bombs. Typical weapons loadings would be as follows:

Standoff Mission—8 ALCM internal and 14 ALCM external.
Penetration Mission—16 gravity weapons and 8 SRAM.
Shoot and Penetrate Mission—8 ALCM, 4 gravity weapons and 4 SRAM.

In general, the B-1B will be capable of carrying an average load of 22-24 nuclear weapons on a single mission. The costs for the weapons should not be attributed to the B-1B program because in general weapons will be transferred from the B-52 aircraft which will be phased out as B-1Bs enter the inventory. If in the future additional weapons are required to uniquely support the B-1B, the associated costs will be submitted to the committee, although it should be again reiterated that we, at this time, do not foresee this condition.

Senator WARNER. You don't have a ballpark idea?

Dr. BORSTING. I do not have any total figure with me.

Senator WARNER. Is your cost estimate for the B-1 a multiyear procurement?

Dr. BORSTING. Yes; it does presently assume, as I mentioned earlier, a savings for multiyear procurement in the outyears once we are sure of the configuration of the B-1B.

Dr. WADE. In addition, the B-1 production contract will be of a firm, fixed-price nature, which gives us a more firm handle on outyear cost control.

Senator WARNER. Can we assume that Congress, which has not yet decided the multiyear procurement issue for large procurement programs, will be approving multiyear contracts for the B-1 procurement lot or decisions will have to be made before testing is complete?

Dr. BORSTING. In any multiyear procurement we inform the Congress of our intention to go on a multiyear contract. For example, in 1982 we have four systems that we have told the Congress that we would go multiyear for.

Senator WARNER. Do you have a breakout of detail to give you the proper authority to do that, as to the differential between a multiyear contract with the B-1 vice the standard program?

Dr. BORSTING. Yes.

Senator WARNER. What is that?

Dr. BORSTING. It is $800 million.

Senator WARNER. Program costs for the B-1?

Dr. BORSTING. Yes, Senator.

Senator WARNER. That is an incentive. Can you assure me that the reductions in the cost estimate of the B-1 are proper with respect to estimates and gains from an improved learning curve? That is the $600 million in the budget which would fund largely engineering change orders; is that true?

Dr. BORSTING. We are continually scrubbing these estimates. At this time we think that they are accurate, but we are having hearings and having the OSD staff work more with the contractors and other people to make sure that these are accurate estimates.

Senator WARNER. Are there any other comments on that?

Dr. WADE. No, sir, it is important to note that this rescrubbing of the detailed cost estimates with the OSD staff is still going on. We are getting to the point where we are close to having a firm foundation on the outyear total program cost.

Senator WARNER. Could you investigate and assure the Senate that funding for the engine components, engineering development, has not been transferred to a component improvement program in violation of the Defense Department regulations?

Dr. WADE. Yes, sir.

Senator WARNER. What improvements to the B–1 bomber were considered by the Defense Department or the Air Force and rejected?

Dr. BORSTING. Mr. Jones will talk about that.

Mr. JONES. As you know, the original version of the B–1 bomber was supersonic. We have deleted that because it does not really buy us any improvement in the ability to penetrate.

As far as I know, there were no major improvements in terms of things that would help the airplane to penetrate that were rejected.

Senator WARNER. Well, from the standpoint of fiscal management then, the Air Force will not come in, in all likelihood, and state that the fiscal managers denied us this variant or that variant or that system, and we got pretty much what the Air Force wanted in terms of the design for the B–1?

Mr. JONES. Yes; that is correct, Senator. They have in there what they wanted and, moreover, OSD in conjunction with the Air Force have added the cruise missile carriage provision which will give the bomber more flexibility and roughly triple the effectiveness over what we had before.

Senator WARNER. Perhaps. Are you capable of putting in the record a description of this B–1 as it now is envisioned? By that I mean, we have the old one, and I remember when I was on the R. & D. Subcommittee I took an active role in preserving some of the dollars so the testing could continue.

Could you describe to me what we hope to achieve at the end of the production line, in this request vice what is on the testbed out there now?

Mr. JONES. We could furnish that for the record.

Senator WARNER. You couldn't give a brief description?

Mr. JONES. I would rather furnish it for the record, if you don't mind.

Senator WARNER. All right.

[The information follows:]

CHANGES FROM B–1 TO B–1B

The major differences between the B–1 (which we have been testing) and the B–1B are as follows:

Cruise missile carry capability.

A relocatable forward weapons bay bulkhead is added to accommodate longer weapons such as current cruise missile.

Provisions for incorporating the capability to carry external stores on the fuselage is added.

Engine nacelles are modified to better match the reduced supersonic requirements and to further reduce observables.

Takeoff gross weight limit is raised from 395,000 to 477,000 pounds for improved range and payload capability.

Provisions for incorporating the capability to carry external droppable fuel tanks is added.

Aircraft radar cross-section is reduced tenfold.

Variable geometry inlet is replaced by fixed inlets with some features for reducing radar cross-section added.

Improved avionics suite drawing from the B–52 Offensive Avionics System modifications to take advantage of commonality with new B–52 equipment and radar equipment and on the F–15 and F–16.

Additional use of composites for weight and cost reduction is added.

Wing sweep retained, but reduced from 67.5° sweep to 60° to simplify the wing fuselage fairing.

Higher frequency jamming and new jamming techniques to contend with most recent threat predictions.

Senator WARNER. What are the costs associated with unfunded modifications to the B-1 bomber, namely, which might be added later?

Dr. BORSTING. By "unfunded" do you mean things that are not in the B-1B cost estimate now?

Senator WARNER. Yes.

Dr. BORSTING. It is difficult to have a figure now. We are working with the Air Force at this stage. We will have our cost-analysis group getting into much more detail.

There could be some additional costs. I would say, if I had to give a ballpark figure, that 3 to 5 percent would be maximum.

Dr. WADE. I would like to address that in closed hearing.

Senator WARNER. What can you tell us by way of public—or it should be public because the Senate has to authorize to approve it—counting all costs associated with the building of the B-1 bomber, in testing, weapons, facilities, et cetera, what is the total cost of the program? What is the figure that the Congress should look at as it makes its decision to fund or not to fund this B-1 program?

Dr. BORSTING. The number that we have at the moment in the 6-year, 1982 to 1987 budget, in 1982 dollars for the B-1, is $22 billion. We are requesting that $2.4 billion be approved for fiscal year 1982.

Senator WARNER. That is the figure that we are going to use.

Dr. BORSTING. As I mentioned, we are still looking at these things, looking at the various items and making sure, for example, that we can achieve the reduced number of engineering changes that I talked about earlier, that we can really achieve these savings.

Senator WARNER. All right.

Now, let us turn to the MX basing operations and the IOC.

In the previous administration, the MX and MPS program had an IOC of 1986, an FOC of 1989. The present administration has cancelled the MPS and instead will deploy a limited number of MX missiles, 18 to 50, in superhardened existing silos until a selection of the follow-on basing mode in 1984.

Is there sufficient funding in the President's 1984 amended budget guaranteeing an IOC of 1986 in the superhardened existing silos?

Dr. BORSTING. Mr. Chairman, we reviewed the cost of the hardening and then of the deployment of a set number of MX missiles with the Air Force as recently as last Monday morning, and it is my judgment that the currently requested level of funds will provide the necessary resources to meet that IOC.

Senator WARNER. To what degree does selecting Titan versus Minuteman silos influence the IOC?

Dr. BORSTING. I don't believe there will be any influence at all. I think there are pros and cons on whether you go to Titan or Minuteman that don't have a bearing on the IOC.

Senator WARNER. Much of that has to do with the soil conditions and so on——

Dr. BORSTING. Yes.

Senator WARNER [continuing]. And other factors?

Dr. BORSTING. Yes; including cost.

Senator WARNER. I am quite interested in that.

What is the anticipated IOC of each of the follow-on basing modes; namely, Big Bird, deep underground missiles, and the BMD?

Dr. BORSTING. As you know, Mr. Chairman, we have an R. & D. program with reference to those three outyear options, and we hope by 1984 to have a firmer technical foundation to assess these options and, I think, in part, the IOC will be part of the assessment, but let me give you some general judgments at this time.

As far as the ballistic missile defense, BMD is concerned, if the program runs right and all of the pieces fit together, I see no problem in planning as of this date toward a 1988 IOC.

Senator WARNER. What is that?

Dr. BORSTING. 1988. I think that is an achievable IOC.

Senator WARNER. For any of the three programs?

Dr. BORSTING. No; the ballistic missile defense element.

As far as CPA is concerned, noting that that is a new concept and the technologies are new, I think early 1990 is the best we can see in that regard.

Senator WARNER. "CPA" means what?

Dr. BORSTING. Continuous patrol aircraft.

As far as the deep underground citadel concept is concerned, my judgment is that that is an early 1990 program at best; maybe it is 1989 if we really move on it.

Senator WARNER. The national elections will be held in 1984 and we can judge from the last two Presidential elections the decisions on major strategic decisions sometimes are delayed and deferred.

If decisions are finalized for 1985 or 1986, for the target date of 1984, this would, I presume, just shift those IOC's that you have provided ahead, proportionately?

Dr. BORSTING. I appreciate your comment. I also would note that the American people today, I think, appreciate better than ever the size and the potential danger of the threat. I think that appreciation is going to continue in the future and perhaps even get higher attention by the American people, to the point where they might be demanding we make that decision early in 1984.

I think the world scene, in part, would drive that decision.

Senator WARNER. You touched on an interesting point. I agree that to make it earlier would perhaps be wise, but I presume you set that timetable predicated on pretty firm technical analysis?

Dr. BORSTING. Yes. The basic technical program needs some demonstrations to prove its viability to the American people.

Senator WARNER. Mr. Jones, I have heard many very praiseworthy observations about you, and I look forward to working with you. Among your expertise is a knowledge of the civil defense matter. Would you enlighten the committee as to the exact nature and magnitude of the civil defense program which is envisioned as a part of the President's submission?

Mr. JONES. Thank you for your generous confidence in me, Mr. Chairman.

As you know, the civil defense program is not the direct responsibility of the Department of Defense, and our commitment in support of the President's decision to reinforce our civil defenses is to work with the Federal Emergency Management Agency (FEMA) who runs that program.

The need for civil defense seems quite clear because the Soviets, on their side, are relatively well protected from nuclear war, while we, on our side, are fully exposed. That is an unequal condition that we can't let stand. Should we do so, we would leave ourselves open to nuclear blackmail, and we would be at a disadvantage in any confrontation.

In order to fix the civil defenses, we in DOD see several requirements. One is that we would immediately begin to improve protection of the American people. That protection should be provided as early as possible and as economically as possible.

A program for planned dispersal of population, concentrated in cities, along with expedient shelters for evacuees, would very quickly reduce the casualties in our country from the 100-million or so level down to perhaps 30 or 40 million.

I believe that protection of industrial enterprises is of less urgency than protecting our people and thus could be started somewhat later. Let me amplify all of this for the record.

[Additional information follows:]

The administration is committed to improving our civil defense posture, and directed a rigorous review of the existing program and policy shortly after assuming office.

Since February, DOD has actively participated in an ongoing series of White House sponsored interdepartmental meetings aimed at defining a policy sufficient for our country's needs, and program improvement options for the President's choice.

The meetings continued over the summer, examining the current program and possible alternatives from four aspects:

scale, or the number of survivors they would produce;

scope, or the extent to which they provided protection for all vital sectors of national society;

schedule, or the earliest attainable dates at which a viable capability could be achieved, and finally

cost, or the amount of dollar resources required to achieve various levels of capability in terms of scale, scope and schedule.

The review is in its final stages and a decision will soon be forthcoming.

Prioritization exists in the Soviet civil defense program. The Soviets have thrown the weight of their effort behind protection of the leadership, assigning a lesser priority to protection of industry, and least priority of all to protection of the general population. While this tells us a great deal about the Soviet system of values, we are not prepared to assign a position of inferiority to any vital segment of our society. Whatever the scope of the future U.S. program, it will afford all segments the best attainable protection.

As this committee is aware, one of the more cost effective approaches to protection of the general population is crisis relocation or population dispersal. This approach has received considerable attention in the course of the current White House program and policy review.

While it would be inappropriate to speculate at this time on the exact role crisis relocation will play in the future civil defense program, it should be noted that in order to sustain population dispersal, some protection must be afforded those industries whose continued functioning is essential if the needs of a relocated population are to be supplied.

For this reason, prioritized sequencing of programmatic efforts should not be construed as assignment of lesser importance to protection of any vital sector of U.S. society. The future program will be an integrated program designed to afford appropriate protection for all.

Mr. JONES. There is one further element. Recent studies including the Defense Science Board Summer Study of Strategic Defense point to the very serious vulnerability of our military bases. A very limited and very tailored Soviet attack could essentially dismember the U.S. conventional military forces because we have chosen to concentrate them for peacetime efficiency rather than for wartime resilience.

One of the concerns that the Defense Science Board expressed was that we in the Department should take some action to improve the survivability of those bases. That is not currently in the program. We would plan to submit that as part of the 1984 budget.

Senator **Warner**. Thank you, sir. Senator Levin?

Senator **Levin**. Thank you, Mr. Chairman.

I wonder if I could get the figure that was used for the MX basing, what part of the $180 billion was represented by that?

Dr. **Borsting**. The MX basing, you mean?

Senator **Levin**. Yes.

Dr. **Borsting**. In 1982 the figure for the MX basing is $2 billion.

Senator **Levin**. That is just the basing?

Dr. **Borsting**. That is the missile and the basing in 1982.

Senator **Levin**. Let me try again.

Senator **Warner**. Would you put that figure out?

Senator **Levin**. Just give us the basing costs, if you would, total procurement and construction and R. & D. of these 100 new shelters.

Dr. **Borsting**. You are talking about the 100 MX's plus the superhardened silos?

Senator **Levin**. No; just the silos.

Dr. **Borsting**. In 1982 dollars that would be around $400 million.

Senator **Levin**. Can you give us the total for 5 years?

Dr. **Borsting**. I don't have the missile and the basing costs broken out for the outyears. I can supply that for the record. I have it for 1982, but I don't have it for the outyears.

[The information follows:]

BASING COSTS

Our preliminary assessment indicates that the cost of design and construction for basing M–X missiles in either Titan and Minuteman silos ranges from $1.1 billion to $1.9 billion. This number is part of the total estimated basing costs of the options we are now considering. Those costs range from $5.6 billion to $7.8 billion in constant fiscal year 1982 dollars. The construction effort can be separated between those facilities directly supporting the missile system, e.g., development and test, logistics and training and those directly related to the site selected, e.g., silo hardening, launch control, roads and utilities and other site support.

Senator **Levin**. Well, what is the total cost of the 200 missiles and their basing? Forget the 5-year figure and give us the total procurement and construction and R. & D. of the 100 missiles and their basing.

Dr. **Borsting**. The 6-year figure for the 100 MX's and the silos through 1987 is $21.3 billion.

Senator **Levin**. That is the total procurement and construction and R. & D. costs for just through 1987?

Dr. **Borsting**. That is through 1987, but I would guess that that is fairly close to being it.

Senator **Levin**. Can you give us some estimate as to whether the basing represents 5 percent of that, or half of that, or two-thirds of that $21.3 billion?

Dr. **Borsting**. I would have to supply that for the record.

[The information follows:]

BASING COST PERCENTAGE

The basing costs represent approximately 25 to 35 percent of the $21.3 billion.

Senator LEVIN. We were told yesterday it was under $1 billion. Would that be your understanding?

Dr. BORSTING. The basing costs, under $1 billion, total system costs?

Senator LEVIN. Yes.

Dr. BORSTING. It would not be my understanding at all.

Dr. WADE. I think the remark yesterday was that the hardening element, the concrete and steel, added to the silos themselves, was less than $1 billion.

In my judgment, it will be somewhere between $300 and $500 million.

Senator LEVIN. You weren't talking about the cost of the basing?

Dr. WADE. No; I was responding to what I thought your question at the time was, that is what would be the delta to add superhardening to the silos itself.

Mr. JONES. Could I add a clarification to that, Senator?

The major part of the basing cost deals with the suspension system which holds the missile in the silo, changes to the present electronic and power systems that are in the silo, and things of that nature. They tend to dominate the total costs of the basing.

Senator LEVIN. Yesterday, in the Governmental Affairs Committee, we got some idea as to the possible underestimating of the costs of the B–1. We were told that it could be significantly more than the $19.7 billion which the Secretary had announced.

Today you are telling us that it could be $22 billion, and that was the figure we ought to be using at the moment?

Dr. BORSTING. The figure that I gave was about $22 billion in 1982 dollars.

Senator LEVIN. That is different from the $19.7 billion that the Secretary told us?

Dr. BORSTING. The $19.7 billion is the basic aircraft cost expressed in 1981 dollars.

Senator LEVIN. So, the difference between the $22 billion and the $19.7 billion is the difference between 1981 and 1982 dollars?

Dr. BORSTING. Not quite. You would also have estimates of the cruise-missile carriage added to the $19.7 billion. This figure would be added.

Also, I did mention that we were doing final review of the overall costs of the B–1 system.

Senator LEVIN. When will that review be completed?

Dr. BORSTING. I would guess in the next 3 weeks.

Senator LEVIN. Why would the Secretary, just 2 weeks ago, have given us costs in 1981 dollars and now you are giving them to us in 1982 dollars, and there is a difference of $2.3 billion just on the B–1 bomber itself?

Dr. BORSTING. Well, again, you had the $800 million added for the cruise-missile carriage which the Secretary did not give in that other figure.

Senator LEVIN. Well, my first question is, why would he have used 1981 dollars and you are using 1982 dollars? It is just 2 weeks apart;

there is a $2 billion cost overrun in the B–1 in 2 weeks, and there could be in the next 3 weeks substantially more?

Dr. BORSTING. When you give——

Senator JACKSON. The Consumer Price Index is down.

Dr. BORSTING. You usually try to give baseline dollars, and originally when we were talking about the B–1B programs we chose to measure costs in 1981 dollars. Since we are today talking about the 1982 budget, it seems appropriate to use 1982 constant dollars.

Senator LEVIN. Why did he include the cruise missile carriage—or why didn't he?

Dr. BORSTING. What is that?

Senator LEVIN. You said the Secretary did not include $500 million or $800 million for the cruise missile?

Dr. BORSTING. I think he mentioned that it should be added, but he did not give the exact amount earlier.

Senator LEVIN. You are not reviewing whether or not you can build this, or should build this plane, without a number of other items being added; is that correct?

Dr. BORSTING. Certainly we are trying, and let me go back. When the President made his decision with regard to whether we would have a B–1B bomber or two bombers and the MX, these were all general program estimates. Now, once the programmatic decision has been made, we are refining them to make them budget-quality estimates.

Senator LEVIN. Do you list items you are looking at to see whether they may be necessary add-ons in terms of budget costs?

Dr. BORSTING. Well, there are several things that have been talked about. One thing, for example, that has been talked about is the aft bomb bay alteration. We feel there is no requirement for that and the Air Force agrees, but that has been an item that has been talked about.

Senator LEVIN. Just the ones that you think might have merit?

Dr. BORSTING. The ones that might have merit?

Senator LEVIN. Yes.

Dr. BORSTING. Let me have Jim talk about one, and that was the switcher.

Dr. WADE. I would like to do that in closed session. We are talking about some of the nuclear features of the airplane.

Dr. BORSTING. That is not more in our estimates and I think it may have merit.

Senator LEVIN. Could you give us the cost of that nuclear feature without telling us what it is, what the possible cost of that would be if you have to add it?

Before you arrived, Scoop, they told us that they are looking at a number of items to see whether they can really be left out. This newest debate of $22 billion in 1982 dollars leaves out a lot of items which they are not sure can be left out and they are looking at them in the next few weeks.

I guess the last statement which was made was that in about 3 weeks we will know whether or not the $22 billion is really a sound figure. We are going to get a list of what their R. & E. is going to enumerate.

Senator JACKSON. We are talking about the B–1? What is the cost in 1981 dollars? That is what we had before, and what is the cost, and have you asked that?

Senator LEVIN. They gave us both figures.

And why don't you repeat them if you would for Senator Jackson?

Dr. BORSTING. Let me repeat the comment, that the initial estimates for the B–1B by the Air Force—we had worked very closely with the project officer to try to get savings—it is one of those things where you try to cut costs to be easy on the American taxpayers, but you have to continue to evaluate whether these savings are proper.

We are doing that now. We looked at that initial number with the cruise-missile carriage that turned out to be $20.5 billion in 1981 dollars.

Senator LEVIN. That is the figure Secretary Weinberger should have used here a couple of weeks ago if he had added the cruise-missile carriage?

Dr. BORSTING. He did talk about that, but kept the two figures separate for clarity.

Senator LEVIN. It was $20.3 billion in 1981 dollars, and in 1982 dollars, just to keep going with our line of questioning here, in 1982 dollars it is now up to $22 billion. Can you give us that list of items that you are looking at in the next 3 weeks to determine whether or not they are going to have to be added?

Dr. BORSTING. One item we mentioned was with regard to the nuclear——

Dr. WADE. That will be added.

Dr. BORSTING [continuing]. That will be added. That is probably in the order of $50 million.

Senator LEVIN. Can you give us the rest of the items?

Dr. BORSTING. Most of the items that I see here, in my opinion, will not be added.

Senator LEVIN. How about the avionics learning curve, is there any possibility of that?

Dr. BORSTING. That is something we will have to look at. I can't really tell. The Air Force has had an independent cost-estimate team looking at things. This is a very normal procedure when you have a cost estimate, to then obtain an independent estimate.

Senator LEVIN. Is that a possible add-on, the avionics learning curve?

Dr. BORSTING. It is a possibility, although it may not be a savings.

Senator LEVIN. If it is required, since it is possible, how much would that be?

Dr. BORSTING. I can't tell you at this stage.

Senator LEVIN. How about the airframe learning curve, might there be a change required in that?

Dr. BORSTING. I would doubt it, in the airframe.

Senator LEVIN. How about the avionics production estimate, might that have to be increased?

Dr. BORSTING. I do not think so.

Senator LEVIN. The multiyear procurements, you have talked about, you assume multiyear procurement for some of the later lots, and you have assumed a savings there of $800 million or so?

Dr. BORSTING. Yes, I gave an $800 million figure.

Senator LEVIN. What about the air vehicle depot support development?

Dr. **Borsting.** That has been deferred because we really didn't know the exact details of how to do that at this stage.

Senator **Levin.** Is that one of the things you are looking at now?

Dr. **Borsting.** That is correct.

Senator **Levin.** Are there any other things that I haven't mentioned that you are looking at?

Dr. **Borsting.** Not to my knowledge.

Senator **Levin.** What was the independent estimate that was available and produced inside the Air Force, apparently, on the cost of the B-1, what was that figure?

Dr. **Borsting.** I can make a comment about the independent cost estimate. It is a very normal procedure. When you are looking at system costs, the entire lifecycle costs of a weapon system, most people will differ slightly. The independent cost estimate for the B-1B came out very close to the project manager's cost estimate. I believe it is around $800 million more, in terms of the system cost.

Senator **Levin.** Why wasn't that disclosed? You call that very close. That is on one estimate of one weapon system and that difference is, as Senator Pryor points out, the entire budget of Arkansas. Why wasn't that figure disclosed to us?

Dr. **Borsting.** The reason it wasn't disclosed to you is that the Department is still studying this. It was an Air Force independent cost estimate, and we in OSD are getting it tomorrow ourselves, and we will be looking at it. This is a very normal procedure. I have not yet seen the details, Senator.

Senator **Levin.** You are saying it was not available 2 weeks ago?

Dr. **Borsting.** It was not available.

Senator **Levin.** The only figure that was available was the figure used by the Secretary 2 weeks ago?

Dr. **Borsting.** Yes.

Senator **Warner.** Your time is up and Senator Jackson has some questions.

Senator **Jackson.** Mr. Chairman, I will be very brief and I will yield more time to Senator Levin. I have an Intelligence meeting at 10 o'clock.

I wanted to ask, first, about the budget decision on the Mark 12A. I understand the administration now plans to close the line?

Dr. **Wade.** Senator Jackson, could we go into closed hearing on that issue? That is an important issue and we need to discuss all of the pieces of it.

Senator **Jackson.** I will leave a question here with the Chairman and you can answer it.

Senator **Warner.** We will be ready to go into closed session. If you have anything further in the open, we can go immediately into closed session.

Senator **Jackson.** What about Senator Levin?

Senator **Warner.** Senator Levin?

Senator **Levin.** I had just a few more for open session.

Senator **Warner.** Could we do that for the record?

Senator **Levin.** I have just two more. This will take 30 seconds, and I will limit it to one question:

What is the total amount of the increases that you are looking at that might have to be added to your now $22 billion figure? If you could give us the total.

Dr. BORSTING. It is very difficult for me to give you a total on any sort of cost estimate like this at this stage of the game. Now, realizing we are also trying to get efficiencies and we are also trying to squeeze things down, it is a very difficult thing. If we state things too high, then we will be requesting too much of the taxpayers' money. If we try to economize too much we may not be able to have necessary capabilities. So this is a very difficult thing to do, as I am sure you know.

Senator LEVIN. Could it be as much as $1 billion?

Dr. BORSTING. It could be and it could be in the 3 or 4 percent ballpark.

Senator WARNER. We will now proceed to go into a closed executive session, and counsel for the committee will certify to the Chair for staff, and we will leave the matter of your clearances to you.

EXECUTIVE SESSION

Senator JACKSON. Dr. Wade, as you know, this committee added approximately $50 million to the fiscal year 1982 DOD authorization bill to maintain the production line for the Mark 12A warhead being deployed on most of the Minuteman III force and until recently planned for deployment on the MX missile.

Now, where do we stand on the decision on a warhead for MX, No. 1; and is it your opinion that the ABRV warhead can be ready to meet the early IOC currently planned for MX in hardened silos; and, finally, how do you envision meeting the warhead requirements for the MX if there is no Mark 12A production line and ABRV is not yet ready for production?

Dr. WADE. Thank you, Senator.

This is an important issue, as you well appreciate. Let me go through the pieces of it. I would like to place on the record what I consider to be several of the more important elements that we have to weigh as we make the decision on the 12A versus the ABRV warhead for the MX missile.

It has been my personal judgment for the past several years, that when we assess the warhead for our strategic forces we should have at least two warheads deployed on each major leg of the Triad. I make this comment in the context that as we modernize these forces, each one of these new weapon systems could be online for as long as 20 to 25 years. Within this period, you might well have a CTB. It is important that we have the highest confidence in the low cased leg of the Triad as we have, for example, in the SLBM force where we have the C–3 and C–4 missiles and where we are moving to the D–5 missile; and in the bomber force where we have the B–61 and B–83 bombs. So part of the judgment given to the ICBM force is to have two new and different warheads deployed on the Minuteman and the MX force.

Now, the ABRV and the 12A, I think, fits this criteria. My personal judgment is that if we make the MX warhead decision soon—and we are reviewing that matter right now—that the ABRV can be online when the MX deploys in late 1986.

Making the ABRV the warhead for MX gives you several advantages. First, is that if the [deleted] version as initially planned for the MX warhead yield hold up, that is, if the accuracy of the test program proves itself out we can save a sizable amount of SNM versus the 12A over the whole program.

[Deleted.]

Second, the ABRV is a more official targeting RV than the 12A when we examine at the true target structure across the Soviet Union.

Third, the ABRV today is designed to have insensitive high explosive which the 12A does not have; and therefore it is a new warhead that is a much more safe and secure system. So, in that context I personally lean toward the ABRV as being the more viable warhead which we should select for the MX force.

There is a problem here in the context of near-year moneys needed to make ABRV the vehicle for MX. The Air Force has to find an additional $100 to $200 million in 1982 and 1983 in order to support that decision. It is in this area that we are running into some trouble. That element is being reviewed, and it is my judgment that we will place this subject issue into the Defense Resources Board in the next 2 weeks or so for a decision.

Senator JACKSON. You see my concern here and it could be the biggest scandal in town, that we are ready to deploy the MX, but we shut down the Mark 12A production line, so that is not available, and you have a hiatus—a missile without a warhead.

Dr. BORSTING. I did have a letter I received on that.

Senator JACKSON. I just wanted to be sure——

Dr. BORSTING. I received a letter from the Department of Energy's Office of Military Applications and they again stated on the record that with the decision coming on the ABRV next month, they can make the 1986 IOC.

Senator JACKSON. With the funding, and the funding has to be there?

Dr. BORSTING. That is right; yes, sir.

Senator JACKSON. So you think we ought to just leave it out?

Dr. WADE. You are talking about 1982 moneys, Senator Jackson?

Senator JACKSON. Yes.

Dr. WADE. I would ask you to give me about 2 more weeks before we address that decision. Yet I think at this time we may need some protection here.

Senator JACKSON. The trouble is we are in conference. We are making the decision tomorrow.

Dr. WADE. My recommendation then is to protect the Mark 12 line with the additional money, as you suggest.

Senator JACKSON. We are trying to be responsible here, and at the same time we want to save the money and have the better warhead, obviously.

Dr. WADE. I think with the moneys we are talking about the insurance is certainly there to go ahead and protect it.

Senator JACKSON. So, you would at this point and then you can cut it later if you want?

Dr. WADE. I recommend we go ahead and move on your position.

Senator JACKSON. To keep the line going?

Dr. WADE. Yes.

Senator Jackson. That is the question I wanted answered; but we are ready—I think it is important that the Department of Defense go to the chairman of the conference and put out an urgent letter on this, because they are about to be zeroed. It will all come to an end, Dr. Wade, and I know you are a good, responsible person here and we don't want to get caught in that hiatus.

So, I would like to have a letter sent to Chairman Price, chairman of the conference, and advise chairman—Senator—Tower, so they can be in a position to know what to do. But that decision will come up tomorrow. We ought to have it up here today, at the end of the day, if you can.

Dr. Wade. I will have it; yes, sir.

Senator Jackson. I will now defer to Senator Levin. We can't do it even in this closed session, but I wanted to talk about the funding of the [ATB] advanced-technology bomber and the dollar amount, but we have to defer that. I will not ask any questions on that now.

I will defer to Senator Levin.

Senator Levin. Are any of you familiar with the leaning-curve change issue?

Mr. Jones. No.

Dr. Wade. There is no one here to answer that, Senator Levin.

Senator Levin. What happened, did Dr. Borsting leave?

Dr. Wade. He joined the Secretary to testify before another committee.

Senator Levin. I think all of my questions go to Dr. Borsting.

Let me go back to the question of what dollars these were estimated in. I am trying to recollect the Secretary's statement. Did he make clear his $180 billion was in 1981 dollars? Do any of you remember?

Dr. Wade. I believe that is true, Senator, but I would have to check that for the record.

Senator Levin. You are saying, in any event, that is what was intended?

Dr. Wade. I am not sure.

Senator Levin. What is the dollar amount, or the cost of the strategic package in 1982 dollars?

Dr. Wade. It is $180 billion.

Senator Levin. Are those in constant dollars?

Mr. Jones. Those are 1982 constant dollars.

Dr. Wade. $180 billion in constant 1982 dollars, and therefore $222 billion in then-year dollars.

Senator Levin. It doesn't make sense to me. You are saying the $180 billion figure was in constant 1982 dollars?

Dr. Wade. Yes.

Senator Levin. Then why would the B–1 component of that have been in 1981 dollars?

Dr. Wade. I am just giving you the figures that I had when you asked.

Senator Levin. Did you understand my question?

Dr. Wade. Yes, sir.

Senator Levin. Does it make sense to you? Well, maybe my question is not clear. The answer I got earlier this morning was that the $22 billion figure was in constant 1982 dollars. Now you are telling me that the $180 billion figure—excuse me—let me go back.

This morning the answer was that the $19.7 billion estimate for the B–1 was in constant 1981 dollars, and that the Secretary, if he had put it in 1982 dollars, would have come up with the $22 billion figure.

Now, the $19.7 billion was part of the $180 billion.

Now, you are telling me that the $180 billion is in constant 1982 dollars. Are you following this?

Dr. WADE. I will have to place it in the record. I am not in the costing office, and Dr. Borsting is, and so we are just lacking that expertise here.

[The information follows:]

STRATEGIC PROGRAM COST

The estimated cost of the strategic program for the period fiscal year 1982–87 is $180 billion in constant fiscal year 1982 dollars. The estimated cost of the B–1B program, which is a component of the overall strategic effort, has been expressed in different contexts in terms of both fiscal year 1981 and fiscal year 1982 dollars.

Senator LEVIN. I have been informed that $1.6 billion in additional aviation and communications and weapons items, and aircraft structural changes and additional testing might have to be added to the B–1, but this was not included in the program cost. For example, $220 million to install a second inertial navigational system to launch the missiles from B–1's is not included in the program cost, and yet the administration is promoting the B–1 carriage capability as a major justification for the system.

There have been many references to the B–1's cruise-missile role and I am wondering whether or not the second inertial navigational system cost should not have been included in the overall program cost?

Dr. WADE. I will have to go back and review that, Senator Levin. It has been my understanding, and also in checking with the Air Force today, that the $20.5 billion figure will do both the cruise missile and the penetrator missile.

Senator LEVIN. That includes the second inertial navigational system?

Dr. WADE. I don't know that. I will have to provide that sub-set system element for the record.

Senator LEVIN. Should it?

Dr. WADE. I will have to review it in detail to see what the add-on capability and need is with that element.

Senator LEVIN. I didn't quite follow that.

Dr. WADE. Whether a second one is needed or what there is aboard the airplane is sufficient to do that job.

[The information follows:]

SECOND INERTIAL NAVIGATION SYSTEM (INS) FOR B–1B

The GAO has estimated the cost for a backup, second INS system for the B–1B at $220M. That is extreme; an INS costs $100K to $200K per copy. For 100 aircraft, even including aircraft changes, the estimate is off by a factor of ten.

However, a second INS is not needed for the B–1B at this time due to the potentially higher reliability of the B–1B radar which is 1980s' technology versus 1950s'. If a second INS is required, B–52 assets will be used as the B–52s are phased out. The current INS, just now being procured for the B–52, is modern and complies with B–1B requirements.

Senator LEVIN. Another additional system which has been excluded but which I understand DOD officials consider necessary and will be added, is the permissive action link required as a nuclear safety device to permit flight crews to permanently disable nuclear weapons carried by the B–1. We require that, the permissive action link, to prevent unauthorized use of these weapons by terrorists or detonation of such weapons in an aircraft accident.

Shouldn't they be on this?

Dr. **Wade**. Senator Levin, it has been my judgment and been my direction that the permissive action link (PAL), command disable system should be on the B–1 bomber.

Senator **Levin**. Was it in their estimate?

Dr. **Wade**. If it was not, it will be.

Senator **Levin**. Do you know whether it was or not?

Dr. **Wade**. The direction I have given concerning that system is that it will be put aboard.

Senator **Levin**. Do you know whether it was in the estimate or not?

Dr. **Wade**. I am not sure. It is like $60 to $80 million, if I recall.

Senator **Levin**. You don't know whether it was in the estimate? That is my question.

Dr. **Wade**. All I know is that it is going to be aboard the plane.

[The information follows:]

PAL/CD FOR THE B–1B

The total costs for the inclusion of the Permissive Action Link/Command Disable (PAL/CD) for the B–1B is on the order of $60 million to $80 million for R. & D. and procurement for 100 aircraft.

The baseline configuration as defined by USDRE&E includes PAL/CD and Cruise Missile carry (internal and external) with a program cost of $20.5B (constant fiscal year 1981 dollars) for R. & D. and production of 100 aircraft.

Senator **Levin**. Another important component of any program is to develop a high performance bomber for both the demanding nuclear strike mission and the conventional roles, which also seem to have been excluded from the B–1 program in the cost estimate. For example, one of the most important effects we worry about which nuclear weapons might have on our aircraft is the electromagnetic pulse destroying electronic circuits, yet I have been informed that such testing of the B–1 has not been accomplished.

Dr. **Wade**. The B–1 bomber was designed from the ground up to be hardened to the phenomena of EMP. In fact, the airframe was designed as a faraday shield. The airplane has not yet been system tested. It will be tested, and we have reasonable confidence that the airplane will meet the EMP requirements.

Senator **Levin**. How can you be confident without testing?

Dr. **Wade**. We should test and we will test the plane.

Senator **Levin**. When will those tests take place?

Dr. **Wade**. I don't have the exact dates on that, Senator, but it will certainly be a part of the program.

[The information follows:]

B–1B EMP TESTING

Electromagnetic Pulse (EMP) testing using the Trestle facility is planned for the B–1B. We are currently discussing whether this testing should be conducted after the aircraft have been maintained in an operational configuration for two to four years or whether early testing should be accomplished on the design which is specified for EMP hardness or possibly a double test.

In either event the testing would not occur until 1986 and would cost on the order of $20 million. To resolve this technical situation we intend to monitor the outcome of planned EMP Trestle testing for the B-52 and E-4B in order to determine the best technical approach. Technical considerations far outweigh the cost considerations, realizing that the cost change to the program is only 0.1 percent.

We intend to make this 1984-1986 decision on technical considerations based upon planned testing on other systems.

Senator LEVIN. What is the degree of confidence that you have?

Dr. WADE. As far as the B-1, very high. On the B-52 it is somewhat questionable.

Senator LEVIN. I understand full-scale fatigue testing on the B-1 fuselage has not been accomplished and the Air Force has not tested these, as well as many of the tactical features in the design of the B-1, and they will be added to the program at a later date. Why hasn't this fuselage fatigue testing been accomplished?

Mr. JONES. My understanding is that a fair amount of fatigue testing on some of the design work has been accomplished. It is not clear what further testing would be required. We can check that and put that in the record; but as far as I know, we don't need any more testing than we have.

Senator LEVIN. On fuselage fatigue?

Mr. JONES. Yes.

[The information follows:]

B-1B FUSELAGE FATIGUE TESTING

Full aircraft fuselage fatigue testing is not required. Subsystems have been tested for fatigue. The aircraft has basically been designed to Mach 2.2 but will only fly subsonic; it shouldn't wear out.

In addition, while full fatigue testing is required for commercial aircraft that fly 3,000 hours per year, the same rationale does not hold for military bomber aircraft that fly 300 hours per year. In 30 years of life the commercial aircraft may have flown 90,000 hours; whereas, the military bomber has flown only 9,000 hours as is true for our proven B-52 aircraft today.

Senator LEVIN. It has been estimated that the fuselage fatigue testing would cost $140 million in additional testing. Why would anybody estimate the cost of it if possibly it is not needed? Would you know the answer to that question?

Mr. JONES. There are differences of opinion on what is really necessary, versus what is nice to have. Usually when people think something is nice, they estimate the cost as well as they do when they feel it is necessary.

Senator LEVIN. What is the cost of the EMP testing, would you know?

Dr. WADE. The normal cost of testing the airframe is in the order of $100,000 a day once set up for testing.

Senator LEVIN. So that testing is less than $1 million?

Dr. WADE. No.

[The information follows:]

B-1B TESTING

Electromagnetc Pulse (EMP) testing for the B-1B is estimated to cost on the order of $20 million for all efforts, including facilities, 6 months of testing, contractor support and data reduction. The testing would be conducted at the Trestle facility.

Senator LEVIN. What about the fire suppression team to suppress fires in the fuel tanks which might be struck by high energy shells, is that in the cost estimate, do you know?

Mr. JONES. I don't know that.

Senator LEVIN. Should they be?

Mr. JONES. It is not clear we need to test for that kind of thing.

Senator LEVIN. You are talking about the system itself. Should that be included in the cost?

Mr. JONES. My review of this program with the Air Force about a week and a half ago indicated that their plan, including their test plans, was complete enough to cover all the things where they felt there was substantial technical risk.

Senator LEVIN. My question though is whether or not that fire suppression system should be included on the B-1.

Mr. JONES. I believe there are some measures on there now that are for that purpose.

Senator LEVIN. So as far as you know——

Mr. JONES. I can't go further into that than is reasonable for my office.

Senator LEVIN. You don't know whether there is any further idea of a fire suppression system which can be added?

Mr. JONES. We have not flagged that as a matter of concern.

Senator LEVIN. You don't know that anybody else has flagged it either?

Mr. JONES. No; I do not.

Senator LEVIN. Will you check into that and let us know, and if a necessary system in that regard has not been added, I presume that you would add it, and would you then give us the cost if you think it should be added?

Dr. WADE. Yes.

Senator LEVIN. OK, we will leave the record open.

[The information follows:]

B-1B FIRE SUPPRESSION

The small arms fire suppression fuel inerting system for the B-1B is not included in the B-1B program. Normal aircraft fire suppression equipment is included.

Fuel inerting is included in tactical aircraft, especially those that make more than one pass on a target, in order to increase survivability against small arms fire.

The B-1B is not intended for these tactical tactics. While remote possibilities exist that a B-1B may be shot down by small arms on either a strategic or tactical mission, the inclusion of funding to negate this situation would properly be termed "gold plating" and should not be considered.

Senator LEVIN. The B-1 has an early IOC and it is promoted as being a partial quick fix to some of our strategic deficiencies. I have been informed that even if we meet the IOC goal of delivering the 15 B-1's to SAC in mid-1986, there is little relationship between the IOC and the aircraft's combat capability. I have been told that the first squadron will not be able to assume nuclear alert duty until at least one year after IOC, and I am wondering if that is true.

Mr. JONES. To my knowledge, Senator, that would not be true. The IOC is generally considered as having the airplane on alert.

There is a considerable time span between the time the airplanes are delivered and the time the IOC is declared. IOC is generally defined to include the crew training and the other procedural things that are necessary to make the thing into an operational system.

To my knowledge, that has been allowed for in the schedule.

Senator LEVIN. I have also been told it would be at least mid-1978 before limited nuclear certification is complete and the first B-1 squadron will achieve the required combat readiness rating needed to assume an alert posture; is that your understanding?

Mr. JONES. I assume you meant 1988.

Senator LEVIN. Yes, I hope. We are looking for a quick fix but not that quick. No, the numbers were transposed. It is mid-1987 before that certification is complete; is that your understanding?

Mr. JONES. Looking at the schedules that I looked at, I did not see any dates out there. My assumption was that that was done prior to IOC. I can check that.

Senator LEVIN. Would you check that and give us an answer?

Mr. JONES. Yes.

[The information follows:]

B-1B WEAPONS CERTIFICATION

The GAO allegation that the B-1B will not be certified for weapons capability at the planned 1986 IOC is untrue.

At IOC the B-1B will be certified for the two primary nuclear weapons, gravity bombs and SRAMS. Additional weapons certification for all the weapons that the B-1B will be capable of, such as ALCM, will be a continuing process from 1984 and beyond.

Senator WARNER. I am sorry I had to step out to meet with the Chief of Staff of the Air Force who is in a part of this program.

The record will remain open indefinitely for this hearing. It is a long series of hearings. I appreciate the indulgence of the witnesses this morning and the courtesy accorded me through my absence and being late.

I am putting questions in the record and perhaps we will have another session, at which time we can have Dr. DeLauer here early next week.

Thank you very much.

[Questions with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JOHN W. WARNER

ATB IOC

Senator WARNER. Was Secretary Weinberger incorrect when he told this committee, in his prepared text, in open session, that the Advanced Technology Bomber would be deployed in 1989?

ANSWER. Very optimistically the ATB could initially be deployed [deleted] the very early 1990s. For new programs, considering technical risks and funding considerations, absolute projections of IOC will vary by a few years.

ATB FUNDING

Senator WARNER. Is there funding in the President's budget to support an ATB IOC of [deleted].

ANSWER. Considering the risks involved, it does not appear prudent to ask the Congress for funding to support [deleted] IOC.

B-1B TOTAL COSTS

Senator WARNER. Counting all costs associated with the decision to build the B-1 bomber including testing, weapons, facilities, etc. what is the total cost of the B-1 program?

Answer. Including cost not in direct B–1B funding lines the estimated costs are on the order of $20.5B plus $400 million properly budgeted in other accounts (fiscal year 1981 dollars). This includes those costs elements such as facilities improvement and simulators.

B–1B COSTS FOR WEAPONS

Senator Warner. Because of the reductions which have been made in the President's defense program, it is even more important now that we understand the true cost implications of the B–1 bomber and the two bomber program.

What programs funded in the President's request in accounts other than the B–1 are directly related to the LRCA program but not publicly identified with it? (Staff estimate: $1½ to $3 billion for testing, certification, improvements production technologies and facilities improvement, etc.)

Are the weapons to be carried by the B–1 funded in the B–1 account? How much was added for weapons which will be carried by the B–1?

Answer. Weapons are not funded in the B–1B account and this is normal. The B–1B will be equipped with existing weapons during the mid to late 1980s. These will consist of SRAM, existing or planned gravity bombs and ALCMs being purchased in the ALCM account.

Additional funding needs caused by the B–1B but funded properly in other accounts amount to approximately $3.0 million consisting of facilities improvement, production technology and engine component improvement. Testing, certification and improvement is funded within the B–1B account and is included in the estimate.

B–1B MULTI-YEAR PROCUREMENT

Senator Warner. Does your cost estimate for the B–1 assume multi-year procurement? If so, isn't it a bit much to assume that Congress, which has not yet decided the multi-year procurement issue for large procurement programs, will be approving multi-year contracts for the B–1 in procurement lots where decisions will have to be made before testing is complete?

Answer. The Air Force estimate for the B–1B does include a cost savings of about $800 million for multi-year procurement. While we are very confident that substantial cost savings can be attained via multi-year procurement for stable production programs such as the F–16, we are less confident for the initial production for the entire B–1B system. Some of the subsystems that are common with other programs or derivatives of systems already in rate production on other programs are excellent multi-year candidates. This list is substantial and includes items such as the radar, OAS, tail warning system, common doppler, radios, engines and others. These are tested systems.

For the unique B–1 aircraft components and subsystems, we intend to be cautiously optimistic in that we will not move into multi-year commitments until testing and rate production have been achieved.

B–1B MULTI-YEAR PROCUREMENT COSTS

Senator Warner. What is the cost of the B–1 program if Congress does not approve multi-year procurement?

Answer. Multi-year procurement can save the Department considerable amounts, especially on stable production programs or for equipment that has been previously purchased for other weapon systems. For the B–1B program a cost savings of 4 percent ($800 million) is estimated.

B–1B COSTS LEARNING CURVES

Senator Warner. Can you personally assure me that reductions in the cost estimate of the B–1 bomber are proper with respect to estimates of gains from an improved learning curve (about $600 million) and in the budget which would fund likely engineering change orders?

Answer. Both the learning curve and the Engineering Change Order (ECO) factor of 6 percent are conservative considering the fact that four B–1 aircraft have been built and the changes to a B–1B are relatively modest from an aircraft structures viewpoint.

Avionics are changed from the 1977 B–1; therefore, different learning curves and ECO factors were used to account for this.

B-1B ENGINE COMPONENT IMPROVEMENT

Senator **Warner**. Could you investigate and assure me that funding for engine component engineering development has not been transferred to a component improvement program in violation of Defense Department regulations?

Answer. Component Improvement Program (CIP) funding for the B-1B engine has been included in the proper engine CIP account in accordance with Department regulations. The funding is approximately $150 million over the five year period. The F-101 engine, especially the core, is not unique to the B-1B. The KC-135 reengining program, fighter aircraft engine derivative program and others are using the core F-101 engine.

B-1B IMPROVEMENTS

Senator **Warner**. What improvements to the B-1 bomber were considered by the Defense Department or the Air Force and rejected, either for cost or requirements reasons, and how many of these are you willing to certify will not be added at some later date?

Answer. No systems have been rejected from the B-1B if a valid and legitimate requirement was established. Costs have been a determining factor for those systems considered to be marginal effective or more commonly in the "gold plating" category.

While tradeoffs among various subsystems will continue to occur considering technology advancements and threat changes, we know of no systems that should be added at a later date that will increase program costs.

Being realistic though, we certainly realize that over the life of the B-1B system additions and changes will be necessary.

In summary, we have not "bow waved" any required and valid improvements into the future to understate B-1B costs.

B-1B MODIFICATIONS

Senator **Warner**. What are the costs associated with unfunded modifications to the B-1 bomber which might be added later?

Answer. The GAO has listed certain modifications to the B-1B that might be added later, thus implying that costs are being "bow waved". This is not true. These potential modifications consist of subsystems such as the Forward Looking Infrared (FLIR) and the communications jammer. Both of these items have been considered along with others for potential inclusion on the B-1B. All of the items have been considered on their own merits considering valid requirements, costs and the potential for "gold plating" or marginal effectivity. For example: The FLIR cannot be justified considering the capability of the multi-mode radar. In contrast the communications jammer is viewed differently. It may be a valid requirement; however, it would be traded off for the defensive avionics acquisition jammers which perform a similar function.

MX BASING OPTION

Senator **Warner**. The rejection of MX/MPS in favor of "Big Bird" or deep underground missiles was surprising because, although MPS was the product of extensive studies over two Administrations, "Big Bird" and deep basing have not been presented as the result of any public technical studies. I would like to ask each of our witnesses whether they personally recommend to their superiors either "Big Bird" or deep basing as a substitute for deceptive basing?

Dr. **Wade**. Mr. Jones and I fully support the President's decision to carry out an aggressive R. & D. program on Deep Basing, Continuous Patrol Aircraft, and Ballistic Missile Defense so that, when adequate technical information is available, a selection can be made among them. Not enough data are available at this time to make a national commitment to deploy any one of them.

ALTERNATIVE BASING MODES

Senator **Warner**. I would like to ask each of our witnesses whether they personally recommend to their superiors either "Big Bird" or deep basing as a substitute for deceptive basing.

Dr. **Borsting**. Each of these options requires considerable additional study before prudent recommendations are possible.

MX BASING OPTIONS

Senator **Warner.** I would like to ask each of our witnesses whether they personally recommend to their superiors either "Big Bird" or deep basing as a substitute for deceptive basing?

Mr. **Latham.** Each of the basing alternatives creates different requirements from the standpoint of command and control. From this standpoint, any of the options can be supported, in the sense that we have conceptual solutions and technology available to implement the essential command and control functions.

Senator **Warner.** What studies conducted by the Defense Department showed that Big Bird or Deep Underground Basing were superior to deceptive basing?

Answer. That conclusion comes from the almost elementary arithmetic of the situation. The Soviets could easily build enough warheads to destroy an MPS system of almost any conceivable size. They could not build enough warheads to vitiate a Deep Basing or Continuous Patrol Aircraft system, although these systems have other possible problems which must be investigated between now and 1984.

Senator **Warner.** Could you brief this committee on Big Bird and deep basing, show us the conceptual design, and tell us who in the contractor world has been working on these concepts for the Defense Department?

Answer. Yes; we would be pleased to do so at your request.

Senator **Warner.** The administration claims that by 1990 the Reagan strategic package will double the number of surviving warheads in the event of Soviet attack. Can you explain in detail how this is so, and could you be very clear about your assumptions?

Answer. The growth in the number of surviving warheads between 1981 and 1990 is due primarily to bomber force improvements—first, the addition of about [deleted] air-launched cruise missiles and later the B–1B—and to the deployment of [deleted] Trident submarines [deleted] with the C–4 and [deleted] with the D–5 missile and about [deleted] sea-launched cruise missiles on attack submarines. In addition to pre-launch survivability, the number of surviving warheads also accounts for weapon system reliability and probability to penetrate Soviet defenses.

Senator **Warner.** The President and the Secretary of Defense have placed great emphasis on the "window of vulnerability." Can you describe for us in quantitative terms the "window of vulnerability" and show us how quickly the Reagan program closes the "window of vulnerability" relative to that of the Carter administration?

Answer. An important focus of the Reagan program is to strengthen U.S. strategic posture as quickly as possible so as to close the growing imbalance between U.S. and Soviet strategic forces. Therefore, we are pursuing the best possible, least risky and fastest deploying programs during the critical 1980s. Figures 1 and 2 illustrate the effect of the Reagan program on three measures of surviving capability—warheads, equivalent megatonnage and hard target kill potential.

In the fully generated case, the Reagan program in 1990 increases surviving warheads by about 10 percent, and surviving equivalent megatonnage and hard target kill potential by about 25 percent relative to the Carter program. The increase over the previous program is somewhat less in the peacetime alert case primarily because of assumed peacetime bomber alert rates, which could be raised if warranted.

FIGURE 1.—INDICES OF SURVIVING U.S. CAPABILITIES AFTER A SOVIET FIRST STRIKE

[U.S. forces fully generated]

Warheads	Equivalent megatons	Hard target kill potential
[Deleted.]		

FIGURE 2.—INDICES OF SURVIVING U.S. CAPABILITIES AFTER A SOVIET FIRST STRIKE

[U.S. forces at peacetime alert]

Warheads	Equivalent megatons	Hard target kill potential
[Deleted.]		

Senator **Warner.** Could you show why the Reagan administration program would not be improved by the addition of deceptive basing for the MX missile and can you show us how well a one-bomber program using only the ATB could address the "window of vulnerability?"

Answer. Multiple Protective Shelter basing for the MX could not improve the Reagan program because it would not provide for a survivable ICBM force. The Soviets could deploy warheads as fast as we could deploy MX shelters for them to shoot at. Moreover, the considerable resources required to deploy the MPS basing mode would not have permitted the allocation of resources to examine more survivable long-term basing solutions without detriment to other needed programs.

A one-bomber program using only the ATB could not address the "window of vulnerability". Our deterrent posture will depend heavily on bombers and sea-based forces in the decade of the eighties when our concerns are the greatest. A one-bomber program that relies on the ATB does nothing to improve our posture in this critical period. That is why we are pursuing the B-1B which is the best possible, least risky and fastest deploying program available. And it is affordable within the overall strategic program proposed by the President.

STRATEGIC C^3

Senator **Warner.** Dr. Wade, Mr. Latham: As you know, the Senate Armed Services Committee undertook, at its own initiative earlier this year, to recommend over $340 million for a series of improvements to the National Strategic Command, Control and Communications Network. In doing so, we recognized the urgent needs that exist for modernization, EMP-hardening and improved anti-jam capability in our C^3 system even before the President called for action in this area. To what degree do the C^3 initiatives undertaken by the Armed Services Committee anticipate and conform to the improvements the President intends to make?

Dr. **Wade.** The initiatives undertaken by the Armed Services Committee constituted an important step in resolving a number of key deficiencies that were identified in testimony to the Committee by senior DoD officials. For the most part, these deficiencies pertain to the [deleted] survivability of strategic command and control, [deleted]. The Committee's recommendations, if approved by the Congress, will help accelerate achievement of a strong foundation of the overall capability we are developing in accordance with the President's decision. The program to attain that overall capability addresses the need for endurance of strategic command and control, as well as short-term survivability, for assuring deterrence. In addition, several of the Committee's recommendations, if approved by the Congress, will directly benefit our efforts to strengthen the endurance of the C^3 system.

Senator **Warner.** To what extent are the funding profiles and program schedules for Presidential initiatives contingent on Congressional approval of the SASC recommendations?

Mr. **Latham.** A number of programs being undertaken as a result of the President's decision will be favorably affected if the Congress approves the Committee's recommendations. Key among these are: expansion of PAVE PAWS phased array radar coverage for detection of submarine-launched ballistic missiles; the several EMP hardening initiatives; improvements in VLF/LF communications; development of the multi-mission EHF communications satellite; and acquisition of the sixth Mobile Ground Terminal. In the event the SASC initiatives are not funded in fiscal year 1982, the costs of the President's package will need to be increased and the operational dates for several of the initiatives adjusted accordingly.

Senator **Warner.** Dr. Wade, Mr. Latham: I understand that the objectives of the President's C^3 package are, in general, as follows:

To achieve high confidence of connectivity [deleted].
To achieve some measure of endurancy [deleted].
To achieve a [deleted] capability.

Is this, in fact, an accurate characterization of the goals of the President's program and how, specifically, are you hoping to accomplish them (i.e., what steps do you believe will give the aforementioned capabilities and what are you planning and budgeting to take those steps?

Dr. **Wade.** The objectives of the President's program emphasize balance of strategic force and C^3 capabilities, and within the C^3 system itself. Within the strategic C^3 system, we are addressing the process on an end-to-end basis, that is, including the sensor systems and means for decision-making and force direction, as well as connectivity to the forces. If the C³ system does not function satisfactorily on an end-to-end basis then the capability to use the strategic forces, when we need them and in accordance with our employment plans, will be seriously degraded.

I would, therefore, portray the elements of the President's package as follows. First, we will correct those deficiencies that pertain to reliability and survivability of the most essential strategic C³ functions, on an end-to-end basis. Several of the initiatives we are taking in this regard will also contribute to endurance. For example, completion of the deployment of the E-4B airborne command posts to serve the National Command Authority will significantly improve the survivability and provide some endurance for the most critical decisionmaking function. Similarly, the mobile ground terminal program will provide survivability, and help us achieve greater endurability for receiving, processing, and disseminating missile attack warning data.

We have also identified those strategic C³ functions which are specifically needed to support an enduring force posture. For example, the new [deleted] satellite communications system will provide greatly improved two-way communications with our strategic submarines and with surviving bomber forces. Also, the Integrated Operational NUDETS Detection System, or IONDS, sensors to be deployed on NAVSTAR Global Positioning System spacecraft will significantly benefit our capabilities [deleted]. Our current plans call for several of these initiatives to be completed by 1990.

SOVIET C³ CAPABILITIES

Senator **WARNER**. Mr. Jones, Mr. Latham: I understand that Soviet C³ capabilities are currently regarded within the Department of Defense as being virtually indestructible. That is, that no matter what we do, how we target or attack the C³ system, the best we can hope to do is to interrupt temporarily their command, control and communications operations—we cannot permanently knock them out. Am I correct in understanding that this is the assessment of the DoD? What specific features or characteristics of their system give it this robustness? Do you see any solutions to the problem of building greater survivability and endurancy into the United States C³ network in reviewing Soviet C³ architectures?

Mr. **LATHAM**. The Soviet C³ system is indeed highly diverse and redundant and includes mobile elements as well as large numbers of hardened facilities. Their defensive systems also enhance the survivability of their strategic C³ capabilities. [Deleted.]

We can and do use mobility, diversity and redundancy to enhance survivability, but there are key differences in force structure, strategy, and resources which argue against trying to replicate the Soviet C³ architectures. We need to give greater attention to active defense, in part because such systems may make a significant contribution to the survivability and endurance of our strategic C³ capabilities.

Senator **WARNER**. Dr. Wade, Mr. Latham: Specifically, what is new about the C³ initiatives the President is recommending? Are we really seeing a dramatic commitment to major new programs and technologies to address present vulnerabilities in this area or are we merely getting new rhetoric and slightly higher budgetary priority being given to previously identified C³ modernization programs?

Mr. **LATHAM**. We are presenting a cohesive program to correct strategic connectivity deficiencies during the transition phases of war which is significantly different than the past programs presented to Congress where efforts were heavily oriented towards correcting peacetime deficiencies and those of the initial transition phase. Our new efforts when implemented will more closely match the survivability of the strategic forces they support and will correct many of the transition phase deficiencies. [Deleted.]

As evidenced by the increase in fiscal year 1982–87 costs of 65 percent over that of the Carter program, we are doing much more than rhetoric and minor funding changes. The peacetime and transition problems have been of long standing but specific efforts to correct all of them had not been identified or necessarily supported. In addition to the adequate funding of C³ modernization efforts identified in prior years there are numerous new efforts. Specific examples of new programs include: a new advanced warning system, a CONUS Air Defense rehabilitation, a proliferated ground wave radio network and alerting systems in the Tactical Warning and Attack Assessment area; EMP hardening of airborne and fixed command posts, a new ground mobile command center program, satellite survivability enhancements and improved facilities in the decisionmaking area; and improved interoperability of emergency action message equipments between the Services, VLF/LF receivers for the bomber fleets, a survivable satellite control capability and a new satellite program in the Communications System Connectivity Area.

Senator **Warner**. Is there a "planning wedge" in the out-year budget program associated with some as yet unidentified C^3 architecture which it is hoped will ultimately solve our present problem with C^3 endurancy but which has yet to be conceptualized?

Mr. **Latham**. As indicated in the response to the proceeding question we have [deleted]. Our programmatic action for correcting transition-phase deficiencies will provide a solid foundation for subsequent implementation of more survivable and enduring strategic C^3 systems. The magnitude of additional resources required just to fix the peacetime and transition-phase problems alone were such that we did not believe it prudent to reflect the planning wedges [deleted] given the DOD need for funding of other well-defined programs. To assure that realistic endurance goals are established and that all components of the strategic C^3 program are developed in coordination with the strategic weapons programs, the DOD will be continuing our Strategic Connectivity Review process and high level management involvement in program guidance and surveillance of interrelated efforts.

Senator **Warner**. What is the magnitude of such a funding wedge?

Mr. **Latham**. There is no funding wedge. At such time as additional programs to enhance our [deleted] capability are identified, we will identify the additional resources required and justify them through our program and budget review process. This may require substantial increases in the out-years above that required for the foundation capability reflected in the testimony today.

Senator **Warner**. Dr. Wade, Mr. Latham: I was personally delighted to learn of the President's decision to proceed with a small scale version of the Extremely Low Frequency (ELF) Communications System. How do you rank this system in importance vis-a-vis other C^3 initiatives which will be forthcoming in the fiscal year 1983 request.

Mr. **Latham**. Due to the close interrelationship of programs within the three major strategic C^3 functions of tactical warning, decisionmaking and communications, a rank order of prioritization would be inappropriate as there are salient differences between the communications needs and times of message delivery to each of the three elements of the Triad. The aircraft escape time window and danger to our land-based missile forces from Soviet ICBM attack necessitate that we place a higher near-term priority on improving their communications capability than that of the submarines. The Fleet Ballistic Missile (FBM) submarine force (SSBNs) is the most survivable leg of the strategic Triad today [deleted]. Therefore, the ELF program ranks high in our set of improvements to strengthen this leg of the Triad. It is very important because it improves the submarine forces' ability to maintain covertness, avoid detection [deleted].

Senator **Warner**. Do you believe that—even at its presently greatly-reduced scale—the recommended ELF system will contribute significantly to the critically important connectivity with our submarine force and to the enhancement of the survivability of that force.

Mr. **Latham**. Yes. The system will provide a continuous, very low capacity link to the submarines, which can operate with far greater operational flexibility than when they are directly connected to the links available for disseminating strike orders. [Deleted.]

ATTACK SUBS AND STRATEGIC SLCM'S

Senator **Warner**. Have analyses been performed which assess the impact of the decision to deploy SIOP-dedicated sea-launched cruise missiles aboard U.S. Navy attack submarines will have on the ability of these highly important and scarce assets to execute the tactical missions for which they have been designed and acquired?

Dr. **Wade**. [Deleted.]

Senator **Warner**. What will be the specific numbers of SLCMs deployed on each attack submarine? How many of these will be SIOP-dedicated? What tactical weapons normally carried on attack subs will have to be given up in order to provide space in the hold for nuclear SLCMs?

Dr. **Wade**. [Deleted.]

Senator **WARNER**. What percentage of the sub fleet will have to be reassigned from current operating areas in order to be within range of SLCM targets in Europe?

Dr. **WADE**. [Deleted.]

SPECIAL NUCLEAR MATERIALS AVAILABILITY

Senator **WARNER**. To what degree has special nuclear materials availability been factored into the decision-making process on the strategic force modernization package?

ANSWER. Special nuclear materials availability is one of the factors which was considered, not only with respect to strategic modernization but also our total stockpile requirements. We simply cannot deploy nuclear weapons unless we have the necessary material. We continue to believe, however, that special nuclear materials availability should not be the overriding factor in such decisions [deleted]. Accordingly, we should ensure that DOE funding is both adequate and timely to meet this DOD-projected demand.

Senator **WARNER**. Where, for instance, will the nuclear materials for the additional thousands of cruise missiles now sought, come from?

ANSWER. [Deleted.] With specific respect to cruise missile projections, our planning for the past several years has considered the need to deploy cruise missiles in large numbers.

Senator **WARNER**. Will it be necessary to mine the Titan warheads for their special nuclear materials in order to meet the demand, and if Congress should decline to authorize the dismantling of the Titans, would you expect to have significant SNM shortfall? Could there be a shortfall in any event?

ANSWER. We would not expect the Congress to oppose the retirement of the Titan system. When warheads are retired, the special nuclear materials are recovered to support new weapon production. We would do this with the Titan warheads when they are retired. [Deleted.]

TRIDENT II/D5

Senator **WARNER**. To what degree does the President's announced Strategic Force modernization package change the D-5 program? Is it being accelerated? Is an earlier initial operating capability then 1989 being sought? Are additional funds to achieve either of these goals necessary and are they going to be requested?

Dr. **WADE**. Prior to the President's Strategic Force modernization package our SLBM modernization program contained three follow-on SLBM options: an improved accuracy Trident I C4 (C4U); a longer range improved accuracy C4 (C4L); and the larger, heavier payload and more accurate Trident II (D5). The Trident II (D5) was selected because it moves the U.S. closer to parity per dollar spent than any of the other SLBM modernization options that were under consideration. Our SLBM modernization program, which was initiated in fiscal year 1981, was geared for a specific missile option by the end of fiscal year 1983 to support a 1989 IOC. We do not plan to accelerate this IOC. To do so could increase the risk of attaining maximum achievable performance objectives. The Defense Department's fiscal year 1982 budget requested adequate RDT&E to support planned advanced development work. However, our fiscal year 1982 request was based on early Congressional approval of a fiscal year 1981 $32.9 million RDT&E reprograming request. This request, which was submitted to the Congress in March 1981, has not been approved and we have already been required to delete and dilute some technology efforts that would contribute to the D-5's desired performance parameters.

Senator **WARNER**. What is the Department's current projection of the probable accuracy capability of the Trident II D-5 missile?

Dr. **WADE**. [Deleted.]

Senator **WARNER**. How high a priority is attached to achieving a hard-target kill capability in our strategic submarine force?

Dr. **WADE**. We attach significant importance to this capability. We must attain a capability to render ineffective the total Soviet military and political power structure, including control facilities and military forces. [Deleted.]

THE NAVSTAR GLOBAL POSITIONING SYSTEM (GPS)

Senator **WARNER**. Dr. Wade, Mr. Latham: As you know, the NAVSTAR/Global Positioning Satellite System is now an important issue in our conference with the House Armed Services Committee on the fiscal year 1982 DoD authorization bill. While this issue is somewhat off the specific subject of this hearing, I would appreciate hearing your comments on the degree of priority attached by the Department of Defense *to this program and your thoughts on the importance we* should attach in our conference to supporting the Senate position which endorses NAVSTAR/GPS.

Mr. LATHAM. For several reasons, the NAVSTAR/GPS is quite relevant to this hearing. [Deleted.] GPS will provide that capability if the Senate position is sustained.

In addition, the GPS satellites are well suited for carrying the Integrated Operational NUDETS Detection System (IONDS) sensors, because the constellation provides continuous global coverage, the coordinates of the satellites are precisely determined, and the spacecraft carries a very accurate clock. These attributes are essential to the reliable detection, precise location and near-real-time characterization of nuclear detonations that IONDS will provide when deployed on GPS. IONDS is of fundamental importance for enduring strategic force capabilities, both for management of reconstituting forces and C^3 assets and for assessing the effects of our own strikes.

Accordingly, the Department of Defense places a very high priority on the program.

QUESTIONS SUBMITTED BY SENATOR JOHN C. STENNIS

Senator STENNIS. Mr. Borsting, please provide for the record a listing of all defense programs' line items which comprise the entire U.S. strategic program. Show the funds that were requested in March 1981, for each program's line items and show the funds now being requested in October 1981.

For each line item show any changes in planned force levels, equipment quantities, IOC, production rates and schedules, military capabilities, operational concepts or five-year funding profiles that have occurred between the March and October 1981 budget requests.

ANSWER. Table 1 summarizes changes in the U.S. strategic program between the March 1981 request, and the amended request, which reflects the President's strategic decisions. The following is a summary of the program and outyear force level changes that result from the new strategic program.

ICBM's

Titan.—All Titan II missiles will be deactivated.

MX.—MPS is canceled; 100 operational missiles will be deployed in a new survivable basing mode; a limited number of MX will be deployed as soon as possible in reconstructed silos.

SLBM's

Trident submarine.—The outyear funding for the 10th Trident submarine was deleted from the fiscal year 1982 request. The remainder of the 10th Trident SSBN, as well as the 11th, will be funded in fiscal year 1983. We will then continue to fund Trident submarines at a steady rate of one per year.

Trident missiles.—We plan to develop and procure the Trident II (D-5) missile with an initial operational capability in 1989.

Bombers

B-1B/ATB.—We will procure 100 B-1 aircraft with an initial operational capability in 1986, and will continue to develop the Advanced Technology Bomber as rapidly as possible.

B-52.—All B-52D's, the oldest aircraft in the inventory, will be retired with the first three squadrons leaving the inventory in fiscal year 1982; we will equip all B-52H's for cruise missile carriage and will improve these aircraft with increased EMP hardening and better penetration capabilities.

ALCM.—We plan to accelerate ALCM production and deploy more operational missiles than previously planned.

KC-135.—We plan to improve our tanker force by re-engining about half of the KC-135's.

Strategic Defense

F-15's.—Long-lead funding in fiscal year 1982 budget for 12 F-15's was deleted consistent with fiscal year 1983 procurement reduction from 42 to 30 to satisfy budget cuts. We plan to replace five squadrons of aging F-106 interceptors with new F-15's for North America air defense by fiscal year 1986.

Ballistic Missile Defense (BMD).—We increased BMD R. & D. funding to support the long-term ground based option for MX.

Strategic C³

We are requesting long-lead funding of $65 million in fiscal year 1982 for the planned procurement of three additional FLTSATCOM satellites; and $25 million to initiate development of an EHF satellite communications package for FLTSATs seven and eight. We are requesting $20 million to refurbish a C-135 aircraft to the EC-135 configuration to replace an airborne command post lost in an accident. Because we intend to redefine and restructure the reconstitutable and enduring satellite communications system (RESC) program, $38 million in fiscal year 1982 funding can be deleted.

TABLE 1.—FISCAL YEAR 1982 FUNDING FOR STRATEGIC PROGRAMS

[TOA in FYDP in billions of dollars]*

	March 1981 amended budget	Program changes	October 1981 budget
ICBM's:			
Titan	0.1	−0.02	0.1
Minuteman	.5	−.08	.4
MX	2.9	−.96	2.0
Other	.5		.5
ICBM total	4.0	−1.06	3.0
SLBM's:			
Trident submarine	1.4	−.96	.4
Trident missiles (C4/D5)	1.2		1.2
Operations and other	2.8	−.01	2.8
SLBM total	5.3	−.97	4.3
Bombers:			
B-1B/ATB	2.5		2.5
B-52	2.4	−.10	2.3
FB-111	.1		.1
SRAM	.1		.1
ALCM	.8		.8
KC-135	1.5		1.5
Other	.9		.9
Bomber total	8.1	−.10	8.0
Strategic defense:			
Air surveillance	.6		.6
Interceptor ops	.4		.4
F-15	1.3	−.04	1.3
BMD	.6	+.05	.6
Space defense	.3		.3
Other	.7		.7
Strategic defense total	3.9	+.02	3.9
Strategic C³:			
Missile warning	.7		.7
Command centers	.4		.4
Communications	.9	+.07	1.0
Other	.1		.1
Strategic C³ total	2.1	+.07	2.2
Total	23.5	−2.04	21.5

*Columns may not add due to rounding.

[Whereupon, at 10:16 a.m., the subcommittee was adjourned, subject to the call of the Chair.]

STRATEGIC FORCE MODERNIZATION PROGRAMS

THURSDAY, OCTOBER 29, 1981

U.S. Senate,
Subcommittee on Strategic and
Theater Nuclear Forces,
Committee on Armed Services,
Washington, D.C.

AIR FORCE STRATEGIC PROGRAMS

The subcommittee met, pursuant to notice, at 8:38 a.m., in room 212, Russell Senate Office Building, Senator John W. Warner, chairman, presiding.

Present: Senators Warner, Thurmond, Humphrey, Stennis, Cannon, and Levin.

Staff present: Frank Gaffney, professional staff member; Francis J. Sullivan, minority staff director; Paul C. Besozzi, minority counsel; Brenda K. Hudson, assistant chief clerk; Ronald F. Lehman, E. George Riedel, and James C. Smith, professional staff members, and Drew A. Harker, research assistant.

Also present: Dennis P. Sharon, assistant to Senator Goldwater; Buzz Hefti, assistant to Senator Warner; Jim Dykstra, assistant to Senator Cohen; Bill Furniss, assistant to Senator Quayle; Robert Nichols, assistant to Senator Jackson; Frank Krebs, assistant to Senator Cannon; Arnold Punaro, assistant to Senator Nunn; Greg Pallas, assistant to Senator Exon, and Peter Lennon, assistant to Senator Levin.

OPENING STATEMENT BY SENATOR JOHN W. WARNER, CHAIRMAN

Senator Warner. Today, the subcommittee conducts its fourth hearing since the President made his October 2 announcement on the strategic modernization package.

I welcome my senior colleague, former chairman, Senator Stennis, this morning.

The two most controversial decisions made by the President involve the long-range combat aircraft and a basing mode for the MX missile. These are Air Force programs.

To give an Air Force perspective on these decisions this morning, we welcome Chief of Staff, Gen. Lew Allen; Deputy Chief of Staff for Research, Development and Acquisition, Lt. Gen. Kelly Burke; and Brig. Gen. J. P. McCarthy, special assistant for the MX.

In the fiscal year 1981 defense authorization bill, the Congress authorized R. & D. funds for a multi-role bomber and directed that the Secretary of Defense conduct a study comparing the B–1 bomber, the stretched FB–111 aircraft, and the advanced technology bomber.

This year, funds requested by the President for R. & D. and procurement for the advanced technology bomber were authorized by the Congress, expenditure subject to a two-House veto within 60 days of the President's announcement.

President Reagan has recommended a two-bomber program involving the production of 100 B–1's while development continues on the so-called Stealth bomber.

Testimony received today may well determine whether or not the Congress will agree on the President's recommendation.

Because of the controversy over the MX missile program, the Senate has also provided a two-House veto on MX basing money. The decision by the President to cancel the shell game basing mode for the MX missile represents a major change in approach to our modernization of our land-based missile force.

Most Members of the Congress were quite surprised by the President's decision to deploy between 18 and 50 MX missiles in superhardened existing silos. Such follow-on basing modes as long-endurance aircraft remain controversial.

This committee needs far more detail about these MX basing options than thus far provided. I hope that our witnesses today can give the subcommittee a better idea of the hardware and doctrine associated with the deployment of the MX missile in deep underground bases and on long endurance aircraft.

I am interested also in establishing what role the Air Force played in the decision to cancel the MX MPS to instead turn to these long-range R. & D. initiatives.

The MX and the bomber are not the only Air Force programs impacted by the President's decision. Older bombers such as the B–52D's and existing missiles, such as the Titan II, will be retired early which constitutes a sizable reduction in the nuclear megatonnage of our strategic deterrent force.

Increased funding will be provided to C^3 and Air Defense and the Air Force plays a dominant role in both of these arenas.

We have a great many questions to ask and we welcome our witnesses. At this time, I defer to my senior colleague, Senator Stennis.

Senator STENNIS. Well, Senator Warner, I am here to learn. I am impressed with your statement. It certainly addresses a lot of my sentiments. I think the committee—even though we have heard testimony on this problem for all these years—we still have an uncertainty in our own minds to some degree in consideration to the chief objectives in my opinion.

If we are uncertain here, how can the average Member on the floor be firm in his thinking in trying to reach the right conclusion? So I am going to listen as long as I can and pursue your written testimony later. I think you have the right witnesses here and I commend you for having the hearing.

Thank you very much.

Senator WARNER. Thank you, Senator Stennis.

General Allen, you may proceed.

STATEMENT OF GEN. LEW ALLEN, JR., CHIEF OF STAFF, U.S. AIR FORCE, ACCOMPANIED BY LT. GEN. KELLY H. BURKE, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT, AND ACQUISITION, AND BRIG. GEN. J. P. McCARTHY, SPECIAL ASSISTANT FOR MX

General Allen. Mr. Chairman, I have submitted a written statement for the record and, with your permission, I would simply like to make some introductory remarks on the various subjects.

Senator Warner. As you please. We will include the statement in its entirety in the record.

General Allen. I would like to comment before starting on a slightly different subject. I realize the Senate went through a difficult decision process yesterday and one to which all of you gave a great deal of thought and care. It is clearly gratifying to me that the President's proposed actions in this matter of foreign policy are being supported by the Senate.

I would like to say that, from the somewhat narrow point of view of the Air Force, we are convinced of two things. One is that our ability to provide better for the defense of national interests in that critical region of the world is enhanced by this decision; and, second, many of the concerns that have properly been expressed by the Senate are ones which we are very confident we will be able to ameliorate in practice.

I assure you we understand the concerns that have come out in this debate and we will expend our efforts toward progressing with that program in a sound way and one that provides the protections that the Senate debate indicated are important to the country.

Senator Warner. I thank you for those opening remarks, General Allen. Certainly the most persuasive argument that I encountered in this whole debate was the importance of an AWACS system and its interoperability with our existing and potentially deployed forces in that area.

General Allen. Yes, sir.

Senator Warner. Do you have any comment, Senator Stennis, to his AWACS opening statement?

Senator Stennis. No, nothing further.

Thank you.

General Allen. Over the years, this committee has examined with us and with others the nature of the balance in strategic nuclear weapons between the United States and the Soviet Union. You have observed and expressed concern about the fact that this balance has not been trending in favorable directions for some years.

The nature of the bad trends has been such to cause our concerns to increase steadily. Those concerns are expressed in various ways. They are expressed in terms of the perceptions of an imbalance and the reality and dangers are associated with an imbalance.

I think one of the things that expresses an important aspect of this concern was stated by President Mitterrand of France in a recent interview that Senator Rudman called my attention to. President Mitterrand said that since Soviet actions are based on a strategy of menace, U.S. restraint of the Soviets by strategic arms is of vital importance to Europe. If that balance is not maintained in a way that is credible to both the Soviets and to our allies, the Soviet strategy will succeed in ways that are very serious for all of us.

I believe that is a sound perception. It is one that to me dictates a considerable sense of urgency for us to pick the right course in determining what our strategic forces should be in the future.

The course that we pick has to be one that is tempered by our shared desire for fiscal constraint, recognizing the importance of not placing undue burdens on the economy, recognizing the necessity for balance between our strategic forces and our general purpose forces because certainly the needs for both are intertwined and recognizing the requirement to balance our near, intermediate, and long-term needs and the pace and nature of the program that we recommend.

Now the program which the President decided upon contains five elements. Each one of those elements was subject to a great deal of debate and a great deal of searching consideration. In the final analysis the scope of the program was fiscally constrained due to the President's concern for the necessity of reductions in his previously proposed budget and due to the expressions of concern by many of us in the military about the necessity for a proper balance between strategic forces and general purpose forces.

The program has been prepared with a view toward fiscal constraint, with a comprehensive view of all of the strategic nuclear programs, and it has been prepared after receiving full and sound advice on all of these matters. Not all of the advice received in the matter was accepted, but it was received and given proper consideration.

You asked, for example, about the Air Force's role in the decision process. I have no complaints whatever about the opportunities that the Air Force had to present its views on each aspect of the strategic programs. We did that through several mechanisms: through papers, through discussions with all aspects of OSD, through our considerations in the Joint Chiefs of Staff and in my own case on the particularly controversial aspects of MX through the opportunity to discuss my views before the President.

Now my advice wasn't taken in the MX but I have no quarrel whatever with the fact that it was heard and was considered along with the advice of others before a decision was reached.

The President's program has five major elements. In many people's view the C^3 element is the most important because it represents the glue that holds our forces together. We do have concerns about the enduring survivability of those communications and the importance of rectifying them. The Air Force has responsibilities in that area, and we are anxious to proceed vigorously with those improvements.

The D-5 SLBM on the Trident is an important addition and one which I think we all recognized would be made sometime, depending upon when the technology would adequately permit it to go forward and now is that time.

Strategic defense is a matter which we believe requires additional attention. This area has not been given attention needed for a decade or so and additional attention is important.

Of the various elements of the program, one that has been difficult to address is the MX program because the question of how to base that program in order to assure survivability against an increasing threat of a large number of very accurate Soviet reentry vehicles has given us all great difficulties.

You are aware, of course, because of our previous testimony what the Air Force's preferred solution is. The President's decision was based, as well as I understand it, on the following considerations.

Recognizing the capability which the Soviets have to go to a very large number of accurate RV's in their future force and believing that it is imprudent for the United States to base its weapon systems on the anticipation of effective arms limitations on the Soviets, he concluded that any basing system which depended upon some numerical equivalence between the number of shelters and the number of weapons on the Soviet side could not be relied upon.

For that reason then he disapproved, and that disapproval, as I understand it, is a firm disapproval of basing modes described by the MPS or some modification thereof.

He directed us instead to proceed to develop an alternative survivable basing system. We are directed to proceed in three different areas: continuous patrol aircraft; deep underground basing; and the third is a program, which may be coupled with other programs, based on the concepts of ballistic missile defense applied to the ICBM force.

Now each of those three is being proposed for addressal in the fiscal year 1982 budget. The larger effort will continue the research and development in the ballistic missile defense area where there has been a decade of considerable progress. We are directed to bring these developments and our concepts for survivable basing to a focus in 1984 in order that the administration may select the MX deployment mode.

In the meantime we will continue and, if possible, accelerate the missile development itself. The development is going well. We are confident of it and the President's decision is based on the conclusion that it is extremely important to have a new and accurate missile in the U.S. inventory. The Minuteman system has neither of those characteristics in sufficient degree for the requirements of future decades.

Therefore, we are planning to proceed down that road. This particular sequence of events has the characteristic that the missile will be available for deployment before we can reasonably expect to have any one of those three deployment systems ready to accept the missile.

Therefore, we are faced with the question of what to do in the interim. Does one slow the missile development program? That would be in our view imprudent and inefficient, and the President directed us not to do that.

Does one place the MX missiles in storage for a couple of years while the survivable basing mode is coming into being? That eliminates certain advantages which could be derived from the decision that the President made that we should place an initial number of those missiles into either Minuteman or Titan silos and that we should increase the hardness of those silos. This would provide substantial additional uncertainty in the Soviets' attack plans and would also place at risk the vulnerable and very important component of their ICBM strike force—their large MIRVed systems.

Therefore, we are proceeding to examine carefully that direction. We have been directed and have fulfilled the requirement to provide to the Secretary of Defense our initial studies of the costs and the options for the initial and interim silo deployment. The Secretary of Defense is in the process of reviewing our analyses.

Following that review, which I would anticipate fairly quickly, we will be happy to share those analyses with the members and staff of this committee. They will provide an explanation of the costs and the advantages of either Titan or Minuteman deployments.

In the bomber area we of course have been faced with several issues. Our firm conclusion is that we need to do more in the bomber area, particularly since the development of a survivable MX basing mode remains some years away.

Whereas last year I testified to this committee that the MX and the survivable basing mode was the No. 1 priority of the Air Force, this year I must say that the B-1 program, is the No. 1 priority.

We have gone through a careful examination of the options of adding cruise missiles to the force and using the B-52's carriers, of continuing the B-52's as penetrating bombers as long as we think we can do that, of building a modified FB-111, of going into production on a B-1, of going into production on a modified B-1 and of going into production as quickly as possible with an all new aircraft.

We weighed the pros and cons of each of those alternatives and mixes of them.

I would like to give you examples of a few of the conclusions that have come out of our review. First, the B-52 has been a remarkably successful aircraft. The youngest and newest versions of the B-52 are now essentially 20 years old, and the oldest versions are roughly 25 years old. It has been a good aircraft throughout its lifetime, partly because it is large and we have been able to update it to meet Soviet defenses.

There is no question in our mind as far as its ability to penetrate Soviet advance defenses, which we are certain they have the capability of fielding between the mid-part or the end of the decade, the B-52 is coming to the end of its string as a penetrating aircraft.

For that reason we have made a number of decisions, and those decisions are reflected in the President's overall package. They include the following.

The B-52D's, which are the oldest of these aircraft, are becoming of marginal utility in penetrating Soviet defenses. Although they still have an important conventional capability, we have concluded that, given fiscal constraints, we should accelerate our plan for the retirement of those aircraft and have so proposed.

Second, the B-52G's, which are the aircraft next oldest, are aircraft whose ability to penetrate the Soviet defenses is growing less each year. We anticipate that as we enter the middle part of the decade we will have lost considerable confidence in their ability to penerate Soviet defenses.

Therefore, B-52G's are being converted to cruise missile carriers. By about the middle part of the decade many of them will have been converted to cruise missile carriers while still retaining some penetration role. As we approach the end of the decade, they will be converted to all standoff carriers. That is because we will have decreasing confidence in their ability to penetrate Soviet defenses.

In the past we have estimated that the B-52H's would be good penatrators to 1990. They are the youngest in the fleet and the ones in which we have invested the most in keeping them up with the countermeasures that enable them to penetrate Soviet defenses.

Now, the advances which we see in Soviet air defense systems are such that we have begun to become uneasy about that penetration estimate. As a result, a part of the President's decision was to begin earlier the modification of those aircraft for cruise missile carriers.

That modification gives us additional flexibility because we have high confidence in the cruise missile's ability to penetrate Soviet defenses. As the 52's lose ability to penetrate we can ease them back and place more emphasis on cruise missiles.

Therefore, part of the President's decision was to increase the rate of production of cruise missiles and the number of cruise missiles planned to be procured.

So the program does include an addressal of the declining ability of the B–52 against Soviet defenses and a heavier emphasis on cruise missiles continuing to use the B–52 as the platform for cruise missiles as we go into the 1990's.

Because it is a phased program, there has been a little bit of confusion in the press with regard to what date a particular thing happens. Of course, it is a matter of phasing over time as Soviet defenses improve and as one model and another of the B–52 reaches what we would judge to be the limit of its full capability.

The next issue to discuss in light of the declining capability of the B–52 to penetrate, is: what is the capability of the B–1 as we had it in 1977?

As we examined those questions we concluded that the advantages of the original B–1 over the B–52 were not as great now as we had calculated them to be in 1977. The reasons for that are several.

First of all, the advantages of the supersonic dash capability of the B–1 appear less important now because we anticipate that we will need to use low-level terrain masking flight for most missions.

Second, the higher penetration speed of the B–1, while important was not a sufficient difference. We concluded, as a result of our examination of this factor and many others that the 1977 B–1 did not offer sufficient improvements in penetration against what we were postulating the Soviet threat in the 1990's to be, to want to go into production of that aircraft.

So we next examined what changes could be made in the original B–1 to improve its penetration capability. We have found that we can use certain techniques which will have the effect of reducing its radar cross-section enough so that the electronic countermeasures we will put on the B–1 will be much more effective. We can explain that a little more in closed session. We have obtained greater confidence through tests and developments of additional electronic countermeasures.

We have also developed tactics to take advantage of the synergism of cruise missiles and bombers penetrating the Soviet Union. We have become convinced that the B–1 variant we propose will be an aircraft that will have a very good penetration capability against the threat that we have postulated for 1990, a threat which projects very significant advances in Soviet air defense and is the threat that we anticipate in the 1990's.

In sum, we have very considerable confidence that the modified B–1 will be an effective penetrating bomber well into the 1990's. Of course, it will have other capabilities. It will have cruise missile carrier capability. A part of the President's decision was to add cruise missile's carriage capability from the outset, which represents a directed modification to the program which we had proposed.

Another bomber option that was open to us was the re-engining of the FB–111's. Our studies convinced us that this was a less attractive option. It was in fact an interim approach. The amount of investment required for the length of time it would be available caused us to conclude that it was not the best approach.

The more attractive option, which we considered very carefully, was the option to not start any of these existing aircraft into production now but instead to proceed with a very vigorous and rapid development program for an all new bomber. There is a great deal of enthusiasm for what new technology offers in that kind of design.

We believe that by employing a range of techniques that are available to the United States now a new concept of aircraft can be designed which will have a number of very attractive characteristics and be very effective in penetrating Soviet defenses.

However, as we examined that program, we concluded that even though one would wish it to be so, and many people who so wished proclaimed it to be so, we did not have confidence that one could bring such an all new airplane into the inventory in 1987 or 1989. We did not have confidence that we would be able to produce and deploy, under such a schedule, an aircraft we would have confidence in operating for 20 years. That is clearly the standard we must have for investments of this magnitude.

Therefore, our conclusion was that we should proceed vigorously with the development of an all new aircraft and we should do it on a time scale that is compatible with what we have done in the past. That is, we should bring an aircraft into production with very high confidence in costs and schedules and simultaneously carry on research and development for an aircraft which will enter in inventory in the next decade.

We do not believe it prudent to forego addressing this decade's issues. At the same time we do not believe it is appropriate to forego the opportunities that are offered by the new technology before us.

I don't particularly like the words "two-bomber program" because I think that implies there is production of two bombers going on simultaneously when, in fact, one has arranged it in such a way that B–1 production is well down at the time we imagine we can bring an all new aircraft into the inventory. We are really talking about sequential programs for bombers that enter the fleet over the next two decades. The B–1 is not an interim bomber because that aircraft will be in the inventory a long time. It will be there as an effective penetrator, it will be there as a cruise missile carrier, and it will be there as a very effective conventional weapons carrier.

We are confident of that aircraft, we are confident of our programs and we believe that the President's decision was a sound one based on the opportunities that are before us.

Now, Mr. Chairman, there has been in the press in the last 2 days a discussion about the status——

Senator WARNER. General Allen, I am going to interrupt you for a minute. As you know, we are trying to run concurrently these hearings and at the same time a conference. There are two issues pending before the conference which convenes in 30 to 40 minutes and your viewpoints on these issues could be helpful. We have made arrangements here for a special stenographer to take down your reply to two questions.

So I am going to interrupt you at this time to present the questions to you and the panel such that your responses can be made an integral part of the deliberations of the conference which convenes here at about 10 a.m.

The first question on behalf of Senator Cannon concerns the Minuteman extended survivable power, the MESP program. The Defense Department recommended the program be terminated and that the fiscal year 1982 funds approved by this committee not be authorized. This was part of the effort to achieve $2 billion in outlays as the cut.

General Allen and General Burke, what are your views on this program and its merits?

General ALLEN. General Burke?

General BURKE. There is no question, Mr. Chairman, that the Minuteman extended survivable power program was a program that would have made a contribution to our strategic forces. It was not deleted for any reason other than the budgetary restrictions with which we were faced and I am sure motivated in no small part by an observation that the House had not viewed that program with favor.

It continues to be a desirable program, one that we would have liked to have funded, but given the very substantial cuts that we were given and noting the House reaction we elected to offer that reduction but without any implication that we don't think it is a desirable activity.

Senator WARNER. Well, it still remains, I presume then, in that order of priority and if a cut is to be made, therein is where the cut would come.

General BURKE. Yes.

Senator WARNER. You are not going to at this time readjust any priorities on it?

General BURKE. No, sir. I was asked as soon as this session was over to examine the question of whether there was some lower number that might make a meaningful and proper program and I will do that.

Senator WARNER. In other words, you might consider less funding for this program in order to keep it alive at this time?

General BURKE. Yes, sir.

Senator WARNER. A lower level of funding.

General BURKE. I will tackle that as soon as this session is over.

Senator WARNER. Timing is critical here. Would you care to give some ballpark figures on that level of funding.

General BURKE. I don't have any numbers in mind, sir. I can perhaps get some before this session is over if you can give us that much time.

Senator WARNER. I am reluctant to have you leave the witness table for that purpose.

General BURKE. I won't leave myself, sir.

Senator WARNER. I was going to say could the staff work on that?

General BURKE. Yes, sir, we have got it working now.

Senator **Warner**. Would you indicate to the Chair when you are ready to make a response?

General **Burke**. Will do.

Senator **Warner**. The second question is to both of you gentlemen.

As you know, the NAVSTAR global positioning system is now an important issue in our conference. While the issue is somewhat off the specific subject of the hearing, and as I mentioned earlier I want to get these answers down, but yesterday, General Allen, you and I reviewed the scenario by which I think some of the confusion has resulted. I would like to have you back over what you advised me yesterday and once again see if we can establish a priority within the total Defense Department.

General **Allen**. Yes, sir. During a stage in our budget preparation, the GPS program was being examined within the Air Force. The value to the Air Force and the costs to the Air Force were weighed and it was felt to be an expensive program and was placed low in our priority. It was placed on a candidate list for termination.

When that budget was reviewed by Dr. DeLauer, he recognized correctly that the Air Force had not properly taken into account the need of the system by the other Services. Therefore, a corporate judgment was reached which involved the need for that system by the Army, by the Navy, and by certain classified activities as well as the proposed users within the Air Force. Weighing all of those we reached a corporate judgment that the program in fact had a very high priority.

Because of our concern that we had confused Congress in this way of doing business, each the chiefs of the several services and the various other people that were involved in this program wrote letters to the Congress explaining that we felt this program deserved a high priority. That is our feeling today.

Senator **Warner**. All right.

Senator Stennis, do you have any further questions? I know you are anxious to go on to the conference now and I will defer to your time schedule.

Senator **Stennis**. I want to get back at this some more, but I will just pass for the time being.

Senator **Warner**. All right.

Had you completed the totality of your opening statement before I interrupted with these conference questions?

General **Allen**. Sir, I thought it might be useful if General Burke took just a moment to review the situation on costs with a view toward putting into perspective the various independent audits that have been made and are being made of the B-1 to assure us all that we are soundly pricing and estimating the cost of completion and providing the right rules under which to manage the program.

Senator **Warner**. I think in view of the conflicting testimony received by the Congress yesterday that that would be very important.

General **Burke**. I might, sir, just take a minute to offer a perspective of how the Air Force puts together the elements of a program that includes a major weapons system such as the B-1.

We start with an assessment of the military requirement and that is done in conjunction with the operating command, in this case the Strategic Air Command. From that we derive a set of military requirements which is scrutinized to make sure that the requirements are valid.

We then bring to bear the engineering talent that is available within the Air Force and work out a preliminary design that will meet those requirements.

To that we apply such management experience as we have to develop a program that is comprised of both schedule and cost. That obviously involves a fair amount of subjective judgment in estimates based on experience and other data.

Out of that process, which went on over a period of time and with a fair amount of give and take throughout the Air Force, we developed a B–1 program that we thought provided an airplane of great capability and yet was not gold plated and did not have some of the nice-to-have features that would have cost a bit more than we thought would have been warranted.

We concluded that we could deliver that airplane with an initial operational capability in 1986. In constant dollars, to do the research, development, and build 100 airplanes we estimated would be $19.7 billion plus the cost of a simulator which we had not yet priced because we had not yet developed the concept of training. That is still in the works. Typically, simulators follow the aircraft by a year or so. So $19.7 billion for 100 aircraft with the attendant supplies and support equipment was our estimate. That is the number that the Air Force is working to.

In the October 2 announcement, the President included two features which impacted on this B–1 program and its cost. We were told at that time to plan initially for external cruise missile carriage. We had imagined that we would do that somewhat later. We were told by the Secretary of Defense to plan for that as early as possible and to add a new type of radio as part of the strategic C³ program.

That adds about half a billion dollars to the cost of the airplane, more like $400 million, and brings the number up to about $20.1 billion. In time, we will also add internal cruise missile carriage, which will also cost about $400 million, resulting in a total cost of $20.5 billion in fiscal year 1981 dollars. So that would be our estimate of the cost of the program as it is currently approved and directed.

The purpose of audits is to review all of the constituent elements of a program such as that to see if there are any weaknesses or deficiencies in the way the calculations have been made and to point to areas that might be questionable and will require additional review and consideration. It is not the purpose of audits to substitute for military judgment. It is not the purpose of audits to substitute for engineering judgment. But it is not unreasonable that auditors can and will point out that if the military judgment were this rather than that, there would be a different cost. Or, if you decided to engineer the airplane this way rather than that way, there would be an additional cost.

The Air Force has just completed its own audit of the program by an altogther different group of people than are in the Program Management Office who developed the 19.7 baseline I referred to. They primarily are setting out to see if the original estimates are reasonable. Again, they are not offered as a substitute but as a test of reasonableness.

In this case their audits produced a figure that was about 3 percent higher. We find that a very excellent correlation and we are quite satisfied with it. That effort is now being reviewed by the Office of the Secretary of Defense. They have a cost assessment review group and that is a further step in the process, but in general we are quite pleased with the results of audit.

Meanwhile, the General Accounting Office has completed a preliminary study and published a draft report of the program. The GAO points out that if the military judgments are different and there are other requirements, these will obviously cost money and that if the airplane is engineered and built differently than we plan to build it that will cost money.

They correctly point out that there are many identifiable expenses that can be related to the acquisition and operation of the B-1 that are not included in the B-1 program element costs. That is true, but it is also the traditional way of reporting such costs. Those same sorts of charges could be identified with submarines or with helicopters or other weapon systems and are not normally included in the program element which is primarily for research, development, and acquisition.

We are working with the General Accounting Office now. I would suspect that there will be some changes in its current draft report and the final report that ensues. I have reviewed it in line-by-line detail and I don't find anything in there that is disconcerting or disquieting.

I would be happy to answer any specific questions on that, but in general terms, everything I have seen to this point would persuade me that with high confidence we can embark on this program and that we can deliver a hundred B-1's either at or very close to the cost that we have projected.

[The prepared statement of Gen. Lew Allen, Jr., follows:]

PREPARED STATEMENT OF GEN. LEW ALLEN, JR., CHIEF OF STAFF, USAF

Mr. Chairman, members of the subcommittee, I welcome the opportunity to appear before you today to discuss the recently announced strategic decisions and our plans for putting this comprehensive set of programs into effect. In my remarks today, I will focus particularly on the strategic bomber and ICBM elements of the President's program.

Implementation of these strategic programs is crucial to our nation's security. Above all we must restore the strategic balance. We must field strategic forces that strengthen deterrence and can, if need be, respond flexibly to a range of conflict scenarios and deny the Soviet Union a military victory at any level of nuclear conflict. The strategic program the President has proposed provides the blueprint to rebuild and maintain the strategic nuclear forces required to fulfill these objectives. I urge your full support.

When I appeared before this subcommittee last March, I outlined some of the dimensions of the steadily increasing Soviet threat confronting us. That threat has not diminished. It is real; it is serious; it is growing. Decades of massive military spending have underwritten an awesome expansion of Soviet weaponry across the full spectrum of military capabilities. There is every indication that this level of effort will continue in the years ahead. Our ability to restrain Soviet aggression is limited; the balance between our forces and those of the Soviet Union is unsatisfactory; and there remains a pressing need to improve virtually all elements of our forces.

Nowhere is the challenge more serious and the need to strengthen our forces more evident than in the area of strategic nuclear forces. As a result of the steady expansion and modernization of Soviet strategic forces, contrasted with our restraint, there has been a dramatic shift in the strategic balance. The momentum of Soviet programs has begun to tilt that equation significantly in Moscow's favor.

While we have agonized over strategic modernization programs, and our present bomber and ICBM forces date from the 1960's, the Soviet Union has developed and deployed a steady stream of new, more powerful and increasingly accurate strategic systems. While the merits of the M–X are being debated, the Soviets have at least four new ICBMs under development. The facts are clear. The United States faces the omnious prospect of substantial inferiority unless we undertake the appropriate corrective action promptly.

We must proceed with an overall strategic modernization program that improves the survivability of our strategic forces, restores our strength relative to the Soviet Union and assures that the Kremlin is denied any prospect of success in nuclear conflict. The President's program is designed to accomplish these objectives. We must proceed with it quickly; we must proceed with it resolutely. There must be no doubt in the minds of our foes and friends alike that we have the determination and capability to put our strategic house in order.

The Air Force is responsible for carrying out much of the President's strategic program, specifically:

Modernizing our bomber forces;
Increasing the power and accuracy of our ICBMs;
Enhancing our strategic defenses; and
Improving command, control and communications systems.

BOMBER FORCES

Our fiscal year 1982 budget request will enable the Air Force to undertake a long overdue modernization of our strategic bomber force. We propose to build and deploy a force of 100 modified B–1 bombers with an initial operational capability of 1986 and at a base line cost of $19.7 billion (in fiscal year 1981 dollars). In accordance with the President's decisions, we also plan to incorporate early cruise missile carriage on the B–1B at an additional cost. At the same time we will be proceeding with a vigorous program to develop an advanced technology bomber aiming toward deployment in the early 1990s.

The need to rebuild our strategic bomber force is clear and compelling. Our current strategic bomber fleet of B–52s is old—the latest models having entered the inventory nearly twenty years ago—is becoming more difficult to maintain, and, most importantly, will become far less able to penetrate increasingly sophisticated Soviet air defenses in the years ahead. If we are to maintain a viable deterrent to nuclear war and to major Soviet aggression around the world, the striking power of our bomber forces must be improved.

The United States must have a modern bomber force—a force that can attack mobile and imprecisely located targets as well as fixed targets, that can rearm and carry out repeated nuclear or conventional attacks, that can rapidly project power in a wide range of contingencies far from our shores, and that can be recalled. A force of ballistic and cruise missiles, though very effective against fixed targets, cannot conduct the range of critical missions that a penetrating bomber can.

In line with congressional direction, we reviewed several approaches to satisfy the requirement for a flexible, long range strategic aircraft. These alternatives included a modified version of the B–1, a reengined and stretched FB–111 and an all new advanced technology aircraft. We examined carefully each of these alternatives and various mixes to determine the course of action that would best satisfy our strategic needs.

The answer was clear and unambiguous. Acquiring the B–1B while continuing to pursue advanced technology is the most cost-effective approach. It will enable the United States to field a flexible and extremely capable bomber in the middle of this decade—a bomber that will be able to penetrate Soviet air defenses well into the 1990s and will perform as an effective element of our strategic forces for more than two decades. At the same time, it will allow the time necessary to pursue the development of an advanced technology bomber (ATB).

Concentrating on the development of an ATB alone would be a risky course to follow. The ATB is in very early stages of design and concept development. The technologies involved are exciting and promising. But, because of the quantum leap in technology and consequent uncertainties involved, there would be a high degree of program risk in concentrating solely on an ATB, and a significant acceleration of this program does not appear to be feasible.

Moreover, failure to proceed with the B–1B program would leave the United States with an increasingly limited ability to penetrate Soviet defenses in the latter half of this decade and, at least, in the early years of the following decade. A force of 100 B–1Bs can be brought into service as a badly needed means to strengthen our nuclear, conventional and power projection capabilities at a time when an ATB just will not be available.

The third aircraft considered—the FB-111B/C—has several shortcomings. While available about a year earlier than the B-1B, it would be strictly an interim bomber of limited effectiveness. It would be a far less capable aircraft than the B-1B with reduced range and payload capabilities and greater dependence upon our already stretched air refueling assets. Furthermore, pursuing this alternative would require us to reduce our F-111 deployments in the United Kingdom, thus drawing down our theater nuclear strike capabilities in Europe.

The B-1B, although about 80 percent common with the B-1 canceled in 1977 in terms of its basic airframe and engine design, will incorporate state-of-the-art advances in design and avionics that will make it highly survivable against both existing and projected threats. It will incorporate a combination of techniques to reduce its radar cross section an order of magnitude below the original B-1 and will include the latest developments in electronic jamming technology. These developments will enhance significantly the B-1B's ability to penetrate the most advanced Soviet defenses—including Soviet AWACS, look-down/shoot-down interceptors and monopulse radars.

Even though we expect the Soviets to make major improvements in their air defense capabilities, the B-1B, flying at low altitude and with dramatically reduced radar profile and advanced electronic countermeasures, will be able to penetrate and strike targets throughout the Soviet Union well into the 1990s, and this could be extended by further progress in electronic jamming. After that time, it will be available as a highly effective cruise missile launching platform replacing the B-52Gs and Hs in this role. Furthermore, from its first years of service, the B-1B will provide much needed long range, heavy payload, conventional striking power for theater conflict. It will first supplement and eventually replace the B-52 in this role which is an essential element of our ability to project stategic air power over long distances on short notice—a capability critical to our deterrence of Soviet aggression in Southwest Asia and elsewhere.

The B-1B is a low risk program. The B-1 airframe already has undergone about 2,000 hours of operational testing. We are determined to bring the B-1B into service on time and within projected program costs. The B-1B will be an essential element of our strategic forces for decades to come.

We have recently received the results of an independent cost analysis of the B-1B program. This review was encouraging, and we are now working with the General Accounting Office in their analysis of the program to obtain still another independent audit to refine our cost estimates.

ICBM MODERNIZATION

As the subcommittee is aware, the Air Force had recommended the deployment of the MX in a multiple protective shelter (MPS) basing mode. After reviewing our recommendations, however, the administration concluded that the MPS basing mode would not be survivable against potential Soviet threats and presented environmental difficulties that might have delayed deployment.

The administration's revised MX program calls for completion of the development of the missile and procurement of sufficient missiles to support the operational deployment of at least 100 missiles. The design of the MX missile remains unchanged. It is a four-stage ICBM capable of delivering up to 12 independent reentry vehicles. The first flight test of the missile is planned for January 1983 and we expect to achieve an initial operating capability by late 1986. Our revised fiscal year 1982 budget requests $2.0 billion, principally for research and development work.

In concert with the President's decision, the Air Force is investigating two long term alternatives to improve ICBM survivability—deployment of ICBM's aboard Continuous Patrol Aircraft (CPA) and Deep Basing of ICBM's (DB). We are currently structuring programs to explore these concepts further and have provided the initial results of our research to the Secretary of Defense. In a concurrent effort, the Army, in consultation with the Air Force, will continue to examine the feasibility of developing Ballistic Missile Defense (BMD) for ICBM's.

In the interim, while a survivable, long term deployment mode is being sought, the administration has decided to deploy a limited number of MX missiles in either Minuteman or Titan silos reconstructed for much greater hardness against nuclear effects.

We are examining existing Minuteman and Titan bases to determine potential for superhardening silos at various locations. Our analysis will include consideration of soil conditions—dry, hard soil provides the greatest promise for hardness upgrade—military effectiveness, BMD compatability and cost.

Though much research remains to be done on both the long term and interim MX basing alternatives, work which we are pursuing vigorously, I cannot overemphasize the importance of proceeding with MX development and deployment. Fielding the MX by the middle of this decade will begin to provide the United States with a counterweight to the massive Soviet ICBM force, will provide a much needed prompt counterforce strike capability, and will complicate Soviet attack calculations, thereby enhancing deterrence.

STRATEGIC DEFENSE

We will continue to pursue the programs set out in our fiscal year 1982 budget to strengthen our defenses against bomber and cruise missile attack. We will be upgrading our early warning and surveillance capabilities through the deployment of over-the-horizon backscatter (OTH-B) radars on the East and West coasts and improving on existing north-looking radars. We will be replacing our aging F-106 interceptors with F-15s, and, expanding upon previous plans, we will be procuring at least six additional AWACS to augment ground-based radars in peacetime and to control interceptors in wartime.

COMMAND, CONTROL AND COMMUNICATIONS

We will improve the survivability and performance of our command, control, communication systems. We will be upgrading our ability to detect and assess Soviet missile attack, increasing the survivability of command centers that would direct strategic forces, and deploying more survivable communications systems linking command centers to our strategic retaliatory forces.

CONCLUSION

The strategic balance between the Soviet Union and our country is of very real and grave concern. Because of the momentum of Soviet programs, the relative balance in strategic capabilities will continue to deteriorate until we can field the systems proposed in the President's strategic program. It is imperative, therefore, that we act promptly to set in motion this broad program of critically needed improvements. The hour is late; the time for action is now. Your support for the essential strengthening of our strategic forces is crucial.

Senator WARNER. Now, presumably you have read the article that appeared by Mr. Mintz in the Washington Post this morning.

General BURKE. Yes, sir.

Senator WARNER. We are going to include that article in the record.

[The article "GAO Accuses Air Force of Omitting Billions to Make B-1 Seem Cheaper" by Morton Mintz follows:]

[From the Washington Post, Oct. 29, 1981]

GAO ACCUSES AIR FORCE OF OMITTING BILLIONS TO MAKE B-1 SEEM CHEAPER

(By Morton Mintz)

The Air Force dropped items costing billions of dollars when it submitted its B-1 manned bomber program to make it seem much cheaper than it will be, the General Accounting Office says in a draft report.

The draft listed "questionable reductions" of $2.26 billion that were made to "accommodate" the estimated basic costs goal of $19.7 billion—the figure Congress is working with as it nears final action on the 1982 defense authorization bill.

One of the reductions, for avionics production, accounted for $86 mililon but "could not be explained" by the Air Force Program Office, the GAO said. Another, for $800 million, is for economies to be achieved through a contracting device called multi-year procurement. This assumed saving is "questionable because it assumes a stable production program before system testing is completed," the draft said.

In addition, the GAO said, the Air Force met its $19.7 billion target by:

Omitting at least $1 billion in expenses that are "directly related" to B-1 development, production, testing and initial deployment, but that will be paid for out of funds appropriated for other programs.

Not counting $1.53 billion to $3.28 billion for items likely to be found "desirable" as "testing requirements evolve and improvements are made to the basic aircraft," such as a $650 million capability to carry cruise missiles.

A copy of the draft was obtained by The Washington Post yesterday, a day after the Defense Department admitted at a Senate hearing that the $19.7 billion estimate falls far short of what it knew to be reality.

The Pentagon's use of "low-ball" or "buy-in" figures that are unclear about exactly what items are covered has been a commonplace technique for getting Congress to commit itself to fund major weapons programs. Rarely, however, has the technique been bared even before Congress has acted. By coincidence, the exposure of the rubbery B-1 figures occurred while House-Senate conferees were considering the Nunn amendment, to curb such practices.

Reacting yesterday, Defense forsook the $19.7 billion estimate in testimony before the Senate Armed services strategic and theater nuclear forces subcommittee.

Assistant Secretary and Comptroller Jack R. Borsting said that in 1981 dollars, the $19.7 billion properly should have been $20.5 billion; in 1982 dollars, he said, the correct figure is $22 billion, but it could be 3 percent or 4 percent higher. He wasn't clear whether the figure counted certain items, such as a second inertial navigation system. That system's estimated cost was put at $220 million in the GAO draft.

James P. Wade, Jr., principal deputy undersecretary for research and engineering (R&E), acknowledged plans to add a security-classified "nuclear feature" although its estimated $50 million cost is not included in the Borsting figures.

Wade testified he did not know if the program as now written includes a so-called permissive action link, which would enable an airborne B-1 crew to disable a nuclear weapon. No cost estimate was available for the link, which the GAO draft said is "a required nuclear safety device" described by Defense officials as "necessary" and destined to be added to the program.

Thomas K. Jones, an R&E deputy undersecretary, was uncertain whether the program as it stands provides for a safety system for suppressing fires in B-1 fuel tanks hit by conventional shells. Originally, according to the GAO draft, however, the system was included in the program "but it was deleted to reduce cost."

The draft's list of "questionable" cost reductions included $440 million in the allocation for engineering change orders. The GAO said it was told by Air Force officials that the reduction—about 30 percent of the original total—could limit the ability "to correct system deficiencies and keep support costs low."

The report also said that the basic design relies on avionics that "do not satisfy military standards recently adopted by the Air Force." Meeting the standards would cost an estimated $65 million and delay the program 6 to 12 months.

Senator WARNER. Do you feel you have provided this morning the clarification needed by this subcommittee to the points raised in that article?

General BURKE. Yes, sir.

Senator WARNER. What would be an estimate of those associated costs such that the Congress can look at them in terms of its consideration of your baseline figure?

General BURKE. They for the most part are not large, with the exception of annual operating supports costs. We normally produce that whenever asked for life cycle costs, but again we don't include them in the research, development and acquisition program elements.

The other costs have to do with programs in which we aggregate functions such as manufacturing technology wherein we look at opportunities to reduce the cost of production in all Air Force activities. We will have some portion of that in the future that would be identified with the B–1.

On the other hand, we will not put a nickel into manufacturing technology for the B–1 until someone can show us that there is an anticipated savings. That is the purpose of that program.

We have an engine component improvement program in which we continue to work to improve and reduce the cost of ownership of all of the operational aircraft engines in the Air Force. In due course we will include in that some moneys for the component improvement of the B–1 engines. But again we will do that with a view toward reducing the total cost of operating those aircraft and not adding to the total cost.

Those are the types of things that typically we don't include in a weapons system program element.

Senator WARNER. Do you have any dollar figures?

General BURKE. We could put them on a line-by-line basis and provide some estimates on each of those if you would like, sir.

Senator WARNER. Well, I would like to have both of you, General Allen, and General Burke just advise this committee very straightforwardly that the estimates you give are not low-ball or buy-in figures in order to persuade the Congress to consider this program.

General ALLEN. They are not, sir.

Senator WARNER. Unequivocally?

General ALLEN. Unequivocally. They certainly are numbers which provide us, and we reach that decision consciously, a challenging objective to control cost and configuration. We believe that is important to do and that we should do that.

We have had a great deal of success in recent programs such as the F–16 where we have paid particular attention to the control of configuration and the control of cost. We believe we should do that for this program and we intend to do it. Our decisions on configuration so far have been made with that objective in mind and we will pursue the program that way.

Senator WARNER. General Burke, I presume you concur in that observation?

General BURKE. Yes, sir. It is unfortunately impossible to give absolute guarantees on any program. There are development risks. There are always the possibilities that costs will increase higher than are expected. I don't know of any major program that the Air Force has ever entered into in which we have more confidence than we do in the B–1. We have a 10-year base of experience.

In current dollars the country has already spent about $6 billion in development on the B–1. We have a highly competent and established Air Force management team. The B–1 contractor associates are well experienced and I think well able to deliver this. We are not inventing anything new in the B–1.

Senator WARNER. That comes to the heart of my first question. The Air Force is going to be concurrently developing the ATB technology while it pursues a production line for the B–1. I can foresee a situation where you will be tempted to try and let's just use the word graft on to the B–1 some of the technological breakthroughs that you discover in the ATB.

The question then is do you have a fixed B–1 variant design now and is it your intention to go forward with that irrespective of what you discover as you get into the ATB?

General BURKE. The design is fixed in concept. There are always engineering drawings to be worked out, but the basic design is fixed. I think it is as firm in the unambiguous guidance from both the Secretary of Defense and the Secretary of the Air Force as one could ask for that we are not to tinker with this design and that we are not to add any costly items.

If an opportunity came along, as one develops the ATB and other activities that are underway in the Air Force and elsewhere, to do something that was very useful and also very inexpensive, I think it likely we would recommend doing that. But we have no intention and indeed would not tolerate a major change that would have major cost increases.

Senator WARNER. Well, perhaps we ought to put it in somewhat different perspective. It seemed to me that if you came to a discovery in the ATB which was transferable to the B–1 and there was a substantial cost add-on involved, it would be incumbent on you not to just blindly abide by the statements made this morning and that you will just continue down the road, but you would feel an obligation to come to the Congress and share with us these new discoveries and perhaps jointly we would have to make the decision of whether or not to alter the basic concept or, by that time, the production design and expend the additional dollars.

Could we have that understanding?

General ALLEN. Yes, sir, you certainly have that. Your understanding is absolutely correct. We accept that obligation and would do so.

Senator WARNER. I defer to my colleagues who may have somewhat of a different view, but speaking for this Senator, I would feel it very important not to go blindly down the road with a fixed design on the B–1 if you discovered a very significant breakthrough that would enhance the capabilities to the airplane that were transferable at some cost which, in the judgment of the Congress and the administration, would be acceptable.

General ALLEN. Yes, sir. I should say that some of the techniques which lead us to the enthusiasm about the potential of an all-new airplane are well enough understood in the concept of materials and design techniques that we believe we can apply them to the B–1, and have done so and costed that.

We believe we have, in that sense, anticipated some aspects of the breakthroughs that can occur that are applicable to the basic design. Clearly, that can change as time goes on. Our uncertainty in an all-new aircraft approach is, at this stage of the game, in large measure, in the compilation of the total design and manufacture of such an aircraft that will make it a truly effective long-term addition to the force. We can pick off the pieces of technology for application to the B–1 and have accounted for that.

Senator WARNER. And you are representing that you will come back to the Congress each time there is a significant change?

General ALLEN. Yes, sir.

Senator WARNER. Let us proceed now to the question of the Townes Panel and the Air Force. The President and the Secretary of Defense have both cited the Townes Panel report in defense of their MX basing decision.

Gentlemen, could each of you individually tell us whether or not you have read the Townes Panel report?

General ALLEN. Sir, I have read the Townes Panel report. The Townes Panel report, however, was kept extremely confidential within the executive branch and my recollection is that General Burke read the Townes report fairly recently.

General BURKE. That is correct. I read it about October 2 or 3.

General ALLEN. It was the decision of the Government that the Townes report would be kept known to only a few people. I was allowed access to it early.

Senator WARNER. General McCarthy, have you had access to it?

General MCCARTHY. No, sir, I have not.

Senator WARNER. Yet you are the one primarily tasked with the development of the new MX basing system; is that correct?

General MCCARTHY. I am the special assistant for MX matters; yes, sir.

Senator WARNER. Could each of you then—that is, General Allen and General Burke—give me your personal and professional judgment about the Townes Panel report and its conclusions?

General ALLEN. It probably would be better if we went closed. Maybe I can find a way to give a general view.

First of all, to make a few things clear, the Townes Panel was composed of a group of distinguished people with a lot of military experience of various kinds.

The Air Force's access to the final report, as it was written, was very restricted. The reasons were to preserve the privacy of the President's decision process. At the same time, that shouldn't obscure the fact that the Air Force was deeply involved with the Townes Panel in helping them to organize data and making presentations to them.

We have no complaints about our interaction with the Townes Panel. General McCarthy, I think, if memory serves me correctly, probably organized more of the material presented in the Townes Panel than did anyone else, but he was not privy to their deliberations or their final report.

The final report was the report of a distinguished group of people who reviewed the problem diligently and——

Senator WARNER. I think we are all familiar to a greater degree than might be imagined with the Townes report, the composition of the panel, and the manner in which it proceeded.

Speaking for myself, I am going to urge Chairman Tower that he, in turn, represent to the administration that this committee should have access to that report before we make final judgment on the request pending before us.

Senator STENNIS. Mr. Chairman, may I intervene just 3 or 4 minutes?

Senator WARNER. Yes.

Senator STENNIS. As you recall, 10:15 is the time set for this conference.

Senator WARNER. I have indicated that.

Senator STENNIS. I know. I have promised to be there on time and I will be there.

May I ask just a couple of questions here?

Senator WARNER. Go right ahead.

Senator STENNIS. This matter concerns me about the B-1. You remember, gentlemen, this committee never did recommend against the B-1, but we have been in that matter since the first amendment was filed there to call on the President, whomever he might be, to make a recommendation.

You are talking about what you see in the B-1 now. What was your original recommendation, General Allen, about the B-1 for the fiscal 1982 budget? What was your recommendation just while you were free and not encumbered by any executive guidelines?

General ALLEN. I am not sure I can recall any such time, sir. [Laughter.]

Senator STENNIS. Very good. I know partly you were, but what was the first crack you made on the B-1 being restored and moving forward on it for the budget we are talking about now—1983?

General ALLEN. If I understand your question, sir, it really is this: The Air Force of course supported the B-1 going into production in 1977.

Senator STENNIS. Yes, of course.

General ALLEN. When President Carter decided not to do that and emphasized cruise missiles, we proceeded down that line. During the years of the Carter administration, there was no ambiguity in our minds that the President did not wish to entertain suggestions to restart the B-1.

Therefore, our focus all through that period was to maximize our strategic capabilities in terms of the Presidential guidelines that we had. That led us to examinations and documents which I think we have shared with the Congress that dealt with the effectiveness of the B-52 and the use of it as a cruise missile carrier.

It was knowing that President Carter had no sympathy for restarting the B-1 that caused us to examine the reengining of the FB-111's with some initial enthusiasm and those things were all documented during that period.

Now, when the Reagan administration took office and the emphasis was placed by the President on enhanced military capabilities and on prompt and credible response to the existing Soviet threat——

Senator STENNIS. Now you are getting right into the heart of it I think.

General ALLEN. Yes, sir. We did go back and reexamine the B-1. In our examination, we reentered the B-1 into the weighing of the various approaches and reached the conclusions we have described today.

Senator STENNIS. So as I understand, you and the Air Force went to pushing it long before the present determination was made by the President to make this recommendation that is before us now.

General ALLEN. We had been turned down, and as quickly as we reexamined the situation under circumstances where it appeared there was interest in the aircraft, we did propose it. We proposed it early and vigorously.

Senator STENNIS. That is what I wanted to know.

Now, about the old missile question and mix and all of that, who originated and when the recommendation here about going back and using the old sites that we had, to build them up and put some more concrete around them. Frankly, that all sounds mighty weak to me, but when did that come into the picture, the Titan sites?

General ALLEN. Studies that have related to additional hardening and to the adaptability of the MX missile to the Titan or Minuteman sites have been available for a long time. You are correct that they hadn't received a great deal of enthusiasm.

I don't know exactly the nature of the data which the President used in making his decision. I am not privy to that. But his decision of course was based on the need for an interim response while we are working on survivable basing modes looking toward a decision on those in 1984.

Senator STENNIS. You don't give your personal recommendation to that item as I have understood. is that correct now or not, your professional and personal recommendation?

General ALLEN. I support the President's decision on the following basis. That is, the strategic balance between the United States and the Soviets is significantly and unfavorably affected by the rapidly declining survivability of our present missile force.

Our priority has been and remains to correct that situation through the fielding of a weapon which both stresses the Soviet ICBM force and has survivability against Soviet first attack.

The interim solution of placing MX in hardened silos does not provide the full benefits of survivability nor is it claimed to. It does increase substantially the uncertainty in the Soviet planner's mind and it puts stress on his own ICBM's because the MX represents the kind of force that can damage his ICBM force very substantially.

For that reason, as a way of balancing during this difficult decade the situation between the United States and the Soviets, I believe it has merit and is the basis for the President's decision.

Senator STENNIS. But originally it wasn't a part of your planning for now, for these years I mean?

General ALLEN. The Air Force recommendation is well known to the President. That is, we recommended what we considered to be a survivable basing mode and that would continue to be my recommendation, except that he has clearly determined otherwise.

Senator STENNIS. All right. As to the other bomber now, your recommendation is full steam ahead of course for what I call the new bomber or the Stealth bomber or the advanced-type bomber?

General ALLEN. Yes, sir. Our recommendation is to proceed vigorously with that research and development.

Sir, may I correct one aspect of my previous testimony with regard to the history? General Burke reminds me that one of the major motivating factors to reexamine this question of the B-1 was in fact brought about by Congress in 1980.

General BURKE. In the 1981 authorization and appropriation, the Congress mandated that the Secretary of Defense move out to build a new multi-role bomber, a bomber capable of penetration of Soviet Union, of conventional applications, and of cruise missile carriage as soon as practicable but no later than 1987. So I would say that provided a great deal of the impetus for the Air Force activity.

Senator STENNIS. All right. Thank you.

Thank you, Mr. Chairman.

Senator **Warner**. Before deferring to Mr. Cannon for questions, I want to clarify the definitions here. Chairman Stennis said "go full steam ahead with the ATB." You used, "We will pursue it vigorously." I think we need a little better definition here of this timely sequence.

For instance, one of my colleagues approached me yesterday and said, you know, if this country can go to the Moon and we have technology which indicates that we can produce a bomber which is substantially more capable than the B-1, why should we put this money into the B-1 now, and why shouldn't we take the B-1 money, add it to what we are going to put in the ATB or some mix of the dollars and just go with the one program as fast as we can? This individual Senator said a Manhattan-type project and get the thing produced and online.

Now, putting aside the conventional role of the B-1 and many of the other attributes which make it a valuable inventory asset, we have to address that type of reasoning here certainly on the Senate side.

General **Allen**. Yes, sir.

Senator **Warner**. So, the question is: Are you going ahead with the ATB as far as you can with an efficient program dollarwise matched to the engineering developments as they come along?

General **Allen**. Yes, sir.

Senator **Warner**. Then, secondarily, how carefully did you and others weigh the option of not going ahead with the B-1 and adding all the money necessary to achieve this second bomber?

General **Allen**. We are proceeding with a program that brings the new bomber into the inventory as rapidly as we believe it is responsible to do.

Second, in the examinations of those——

Senator **Warner**. Not limited by any fiscal considerations and purely developmental considerations in R. & D.; is that correct?

General **Allen**. Yes, sir, that is basically correct. Of course, it is very difficult to respond to the removal of fiscal constraints in ways that we would regard as irresponsible. I mean by that one doesn't, and I am sure you don't mean that either, just throw money at an issue.

Senator **Warner**. The schedule was dominated by engineering and developmental considerations and not dollars.

General **Allen**. That is correct. The proposals which some people made that one could do this very quickly invariably imagined that the design could be frozen quickly and that one would be prepared to go into production rather rapidly with that kind of a design and, could fabricate such an aircraft.

In some respects that may indeed be correct. In the sense of a Manhattan project or really more appropriate, as you said, an Apollo project, I think it probably is true that if one made those kinds of efforts you could end up flying an aircraft quickly.

There is a very big problem with that approach and the Apollo is probably a good example of that. To take an accelerated approach you have to fix designs and make decisions very early in the process. The resulting design may not have lasting value to you in your inventory any more than Apollo has had. We are now on the Shuttle because Apollo wasn't really the vehicle we would have wanted for further applications into space.

In the same way the concerns we have is that the advanced technology design is not stable. It has fluctuated within the last year. We have changed our views. The technologist or the manufacturer may correctly say, "If you guys wouldn't ever change your mind we could build something." And the answer is yes, but it has to be something that will operate effectively, that will operate in the inventory for a long time, and will have operating costs that we can handle. We have to find the way to be confident of those factors and we are not. It has changed several times lately and is continuing to change.

The technology is exciting. We want to proceed as rapidly as we can and we have proposed a very vigorous program. We believe it will represent a significant new concept in the design of future aircraft which we are obligated to bring about in a sound engineering way.

Senator WARNER. Just one additional question on that. As you know, I have worked along with the Department of Defense in this program, being one of those Senators designated to receive the information and have the clearances.

To what extent can we discuss in open session the number of different designs within the Stealth concept that were examined and have we in fact settled now on one of those designs and are we going to stay on that design right straight through, or are you going to go back and reopen all the alternatives?

General ALLEN. I think we really should go closed on that.

Senator WARNER. All right. We will go closed for that. I think these are questions that are going to be asked in the Senate, in the debate and on the floor.

General BURKE. Could I offer a comment on the Manhattan project which you cited as an example? I think the history is important to remember. The Manhattan project did not produce operational weapon systems that could be operated and maintained by Air Force people.

When the Enola Gay made its mission it was flown by an Air Force colonel true enough, but it had onboard a Ph. D., Dr. Harold Agnew, whom you know. It was that complex and that difficult to understand. It was probably well into the fifties before we had those systems out in a manner where they could be operated and maintained by Air Force people.

Senator WARNER. I am going to defer now to Senator Cannon.

Senator STENNIS. May I say my "full steam ahead," means wide-open throttle of a steam engine, and I used to run a cotton gin. [Laughter.]

Senator LEVIN. What kind of gin was that, Mr. Chairman?

Senator STENNIS. Cotton gin with a steam engine full throttle. [Laughter.]

Senator WARNER. Senator Cannon?

Senator CANNON. Thank you very much, Mr. Chairman.

I want to thank you for raising the question of MESP which I understand has been advanced and which has been asked in part.

I would like to pursue that a little bit. First, let me say that neither the Minuteman missiles, the MX and the Titan and/or Minuteman silos or the MX in deep underground silos or ICBM's defended by ballistic missile defense could be controlled or operated in a post-attack nuclear environment without long-endurance emergency power systems, nor can land, mobile, or fixed control centers operate without power.

Now, the Reagan program stressed the survivability and endurance and of necessity relies on the ultimate need to communicate with our strategic forces even after a nuclear attack for extended periods afterwards.

Now let me ask either General Allen or General Burke, is that what the MESP program was directed toward?

General Burke. Yes, sir; you stated it very accurately.

Senator Cannon. It is my understanding, and, of course, we are well aware of the fact that the program has now been zeroed. If it were reinstated it would permit us to extend and have a very greatly extended capability on those missiles from a power standpoint; is that correct?

General Burke. From hours to days, yes, sir.

Senator Cannon. I understand that you were to make some figures available as to a fallback position beyond what had originally been requested and that those have been made available. Is there some reason you would prefer not to have them announced in open session here?

General Burke. What we developed, and we did it very quickly, was a somewhat slowed down funding profile which would have reduced the 1982 requirement from the $45 million to $35 million.

Senator Cannon. That would permit us to go ahead then at a slightly reduced level; is that correct?

General Burke. Yes, sir.

Senator Cannon. Of course, a facility has been constructed precisely for that purpose and substantially completed and ready to go; is that correct?

General Burke. Yes, sir.

Senator Cannon. In other words, the capital plant investment is already there and the batteries themselves have gone beyond the R. & D. stage. They are fully developed batteries, are they not?

General Burke. Yes, sir.

Senator Cannon. So, that if we had a position of $35 million, if the conferees put in that figure you could go ahead at a reduced level then with the MESP program?

General Burke. Yes, sir, it would not be reduced in numbers, but delayed in time.

Senator Cannon. All right. Thank you. I will try to do something about that in our conference a little later today.

Let me get back to the MX issue here a little bit.

General Allen, let me ask you, on the MX was the Air Force consulted by the President before he decided to kill the MPS system?

General Allen. Yes, sir.

Senator Cannon. Were they consulted within the last week prior to making that decision?

General Allen. Sir, I am sorry I don't recall the—yes, sir, I do recall.

Senator Cannon. You don't mean yes, they were consulted. You mean yes, you recall it; is that correct?

General Allen. I am really trying to sort out what consulted means. During the preparation process we, of course, had a number of opportunities to present our views and calculations to the Secreary of Defense.

In addition to that, I had an opportunity to present my views on MX to the President. That happened to have been some weeks before the decision and I don't remember the time scale exactly.

As the President came down to his decision, the interaction between the President and the Secretary of Defense was not known to me. I mean, I don't know that process in detail or how the President and the Secretary of Defense went about it, although I know that there were discussions and alternatives proposed.

In the final stages of that process I did not have any role with the President. However, we were continuously discussing it with the Secretary of Defense and his advisers.

Senator CANNON. Up to what point in time prior to the decision announcement?

General ALLEN. Sir, I don't believe my memory is that good, but I would say up until about 1 week before perhaps and maybe it was 2 weeks before.

Senator CANNON. So, that as far as you know there were no discussions in that decisionmaking process within the week immediately prior to the decision itself?

General ALLEN. Well, of course, I just don't know what the discussions were between the President and the Secretary of Defense.

Senator CANNON. I am not asking that. I am asking between the President and/or the Secretary of Defense and/or the Air Force.

General ALLEN. The Air Force had made its views known prior to then and was not involved in the last several weeks.

Senator CANNON. And the Air Force recommendation was for the MPS system. That was the official Air Force position.

General ALLEN. Yes, sir.

Senator CANNON. Did the Air Force have a fallback position at that time from the original 200 missiles and 4,600 shelters?

General ALLEN. Yes, sir; we discussed various alternatives such as 100 and 1,000 which was suggested by others, but we worked the numbers and indicated that alternative was preferable to none.

Senator CANNON. Now in your statement you say, "After reviewing our recommendations, however, the administration concluded that the MPS basing mode would not be survivable against potential Soviet threats."

Is that the conclusion of the Air Force or was that the administration's conclusion?

General ALLEN. That was the administration's conclusion.

Senator CANNON. Does the Air Force come to that same conclusion?

General ALLEN. I understand the reasoning by which the President made that decision.

Senator CANNON. That isn't what I asked. I said does the Air Force come to that same conclusion?

General ALLEN. May I explain the distinction, Senator Cannon?

Senator CANNON. Surely.

General ALLEN. Because I don't want to be misleading by oversimplifying. The Air Force examined the Soviet threat under various assumptions of adhering to present SALT understandings, of not adhering to them, of making a major breakout at the maximum capability that we believed they could have for adding weapons to the ICBM force. We, then examined the extent to which the MPS system could respond to increased Soviet threats.

The conclusion that we came to, that is my personal conclusion as well, is that the MPS approach had a number of inherent capabilities which permitted it to respond in a proper way to even very high expectations of the Soviet ICBM threat. The ways we had available were expanding the shelters, adding shelters, and ultimately adding ballistic missile defense.

Now when the President reviewed those discussions and had other advice his view was that the United States should not base its strategic arms on any presumption of negotiated arms restraints adhered to by the Soviets, that there was a flaw in any system which could be overwhelmed by a Soviet build-up program and that the United States should not proceed down that kind of a road.

Therefore, he concluded no matter how one kept addressing MPS there was always the possibility of being overwhelmed by the Soviet threat. Therefore, his conclusion was don't go down that road.

Senator CANNON. I think you did everything but answer my question there and I will get back to that a little later.

General ALLEN. Our recommendation would have continued to be that the MPS is a sound approach. What I was trying to explain is that it is based on a little different line of reasoning than the President used and I understand the President's decision. It has been explained to me and I accept that line of reasoning.

Senator CANNON. Well, I understand you accept it and you support the President's decision. But I am trying to find out what the best recommendation of the military advisers were.

Now, the reference was made to the Townes Commission report and I didn't understand what you said. Did you say you had or you had not read it?

General ALLEN. I have read it.

Senator CANNON. You have read it?

General ALLEN. Yes, sir.

Senator CANNON. When did you read it, General Allen?

General ALLEN. Very quickly after it was provided to others.

Senator CANNON. Well, it was provided to General Burke on October 2. Is that when you read it on the 2d?

General ALLEN. No. I was given access to it early, but I was not given permission to share it with my subordinates.

Senator CANNON. I see. So that later General Burke was authorized to have it on October 2 which was the same day the decision of the President was announced.

General ALLEN. Yes. After the President's decision was made, I asked if I could be relieved of the constraints on sharing it and was told that I could.

Senator CANNON. So that was after the decision was made.

Mr. Chairman, are we going to have access to the Townes Commission report?

Senator WARNER. The Chair announced that it was the Chair's desire to obtain it for use by this subcommittee and that I would in turn convey that recommendation to Chairman Tower who in turn will take it up with Secretary of Defense Weinberger. As a matter of fact, Senator Tower and I discussed that very point yesterday.

Senator CANNON. Let me ask you this, General Allen. Did the Townes Commission report recommend the system that was announced by the President?

General ALLEN. I think it is not really proper for me to comment on their recommendations since they were regarded by the Secretary of Defense as a fairly private matter. But I think the action that you propose of obtaining and reading it is really the best one.

Senator CANNON. Well, I am sure that if we get it, I am sure that would answer it properly. As far as I know, you and General Burke are the only people here that are in a position to answer that.

General McCarthy, did you ever have access to it?

General MCCARTHY. No, Senator Cannon, I did not.

Senator CANNON. Well, let me ask you this, General Allen. How does hardening the Titan silos to house the MX reduce the vulnerability? Does it make any difference if you harden to 2,000 psi or 5,000 psi if the Soviet accuracy is as good as ours?

General ALLEN. It makes some difference. It increases the survivability of the system somewhat as one increases the hardness.

As we have testified in the past, when we take those numbers, that is the kinds of hardness that we can achieve and the kinds of accuracies that we predict the Soviets will obtain in the years shortly before us, we come to a conclusion that that is not a satisfactory course of action to obtain survivability. We cannot assure survivability in that kind of a system.

As I interpret the President's decision, it is that this interim deployment, which only buys us a little time while we are deploying the MX in a survivable mode, will increase in some measure the uncertainty in Soviet planners' minds because they have to account for that additional hardness and they have to account for the threat that these missiles provide against their vulnerable and very capable ICBM's. During that interim it stresses the Soviet system and adds uncertainty in their planning. It does not guarantee us survivability.

Senator CANNON. Has the Air Force developed a plan now to harden the Titan silos up to 5,000 psi?

General ALLEN. Yes, sir. We have developed a tentative plan, as well as it can be developed up until now, and have submitted that to the Secretary of Defense just this week. It will be in the process of review and I have been told that they anticipate sharing that with the Congress and the staff immediately following their review which will be within a week or thereabouts.

Senator CANNON. What are the cost estimates of that plan?

General BURKE. The cost estimates of emplacing the missiles in either Minuteman or Titan shelters is in the range of $5 to $7 billion in current dollars, in 1982 dollars.

Senator WARNER. Would you repeat that again? Five to seven——

General BURKE. Billion dollars.

Senator WARNER. How many silos is that?

General BURKE. Well, we have looked at as few as 18 Titan silos and as many as 40 Minuteman silos.

Senator CANNON. Well, you have looked at it. You are not suggesting that if you put 18 that it is going to cost five to seven and if you put 40 it will still cost five to seven?

General BURKE. It depends on, first of all, whether you go Minuteman or Titan and which of the fields you pick. You get that range. The difference between 18 and 40 is not very significant because most of it is consumed by the start-up cost. The incremental costs get relatively small.

Senator CANNON. Now, is the plan for the first MX missiles to come off the production line in 1986 to put them into the Titan silos; is that it?

General BURKE. Well, it is not yet determined whether it is Titan or Minuteman.

Senator CANNON. I see. And do you know how many you would put into the Titan/Minuteman combination?

General BURKE. The guidance that we have at this point is up to 50 and we have costed out a range of numbers. In our report to the Secretary of Defense, which we delivered late Friday, we gave him a range of estimates and asked in turn for some specific guidance—Minuteman or Titan, which fields and what the numbers are.

As soon as we get that back, which I hope will be this week, we will be able to put reasonably precise numbers to it, although again we have to qualify everything by saying we got to work on this October 3 and these are first-order approximations at this point.

Senator CANNON. You mean you didn't have any projections for that prior to the President's decision; it that it?

General BURKE. We had not studied this question in a manner that would produce high-confidence cost estimates. We had done sort of back-of-the-envelope comparisons over the years. This was the first time that we sat down and really did the preliminary engineering that would provide numbers in which we would have confidence to make a proposal to the Congress.

Senator CANNON. Now would this system meet the same window of vulnerability that the MPS system would have met?

General BURKE. It of course is much smaller in size as planned, but it should be available about the same time.

Senator CANNON. Does it reduce our vulnerability to any degree?

General BURKE. It would to the extent that it adds additional uncertainty in the Soviet mind and to the extent that it deters them from continuing further expansion of their silo based missile force.

Senator CANNON. Well, you said to the extent that it increases the uncertainty for them. Does it increase the uncertainty for them vis-a-vis the MPS system?

General BURKE. That, of course, we don't know.

Senator CANNON. You have planners over there that help study these things and you plan on what you think their reaction would be. Do your planners tell you this would increase or decrease the vulnerability from their uncertainty standpoint?

General BURKE. I think a Soviet planner would have to have some degree of uncertainty as he approaches his calculations as to how he would carry out a nuclear attack, and to some extent that has to be increased when he is looking at silos that are harder than they otherwise would be. But it is not possible for me to put the calipers on that and say what that increased uncertainty would be.

Senator CANNON. But you referred just to the increase of the uncertainty in the silos themselves in their present configuration vis-a-vis their hardened configuration.

What I am talking about is the increased uncertainty between the so-called MPS system and the hardened silo system. I have in mind what former Secretary Brown said when he said it doesn't help a lot to have a 5,000 psi silo in the middle of a crater.

Now, do you agree with that statement?

General BURKE. Yes, sir.

Senator CANNON. Those silos are all well known. Their locations are certainly well known to the Soviets now, aren't they?

General BURKE. Yes, sir.

Senator CANNON. So that the uncertainties would seem to decrease for the Soviets rather than increase, would they not, when you compare the hardened silos vis-a-vis the MPS system?

General BURKE. That would have been my assessment and that was the basis of my recommendation that we build the MPS system.

Senator CANNON. And this possible solution was fully considered by the Air Force prior to making its recommendation, was it not?

General BURKE. Yes, sir.

Senator CANNON. It was one of the options that was considered and ruled out in favor of the recommendations the Air Force made for the MPS system.

General BURKE. Yes, sir, that is true.

Senator CANNON. Timewise is the window of vulnerability about the same in either event?

General BURKE. Yes, sir. Well, it is a fairly amorphous term, window of vulnerability, but the opening would not be affected by it. The closing of the window, I think, depends on the success we have in the longer term solutions that are proposed such as the continuous patrol aircraft, deep underground basing, and ballistic missile defense.

Senator CANNON. Were those other three alternatives considered by the Air Force when it made its initial recommendation?

General BURKE. Yes, sir.

Senator CANNON. Based on the best information the Air Force has now, is it the Air Force's combined judgment that the MPS system was the least vulnerable of the systems considered?

General BURKE. Yes, sir.

Senator CANNON. Turning now to the BMD system, would that be permitted if our Government were to continue the policy of following without having agreed to a SALT II agreement, following the guidelines?

General BURKE. Of course, the Ballistic Missile Treaty was tied to SALT I. It was a treaty that was written in perpetuity with review periods. I don't think anyone holds out the prospect that there is a practicable ballistic missile defense system that can be constructed within the limitations of that treaty.

Senator CANNON. So that we would either have to abrogate the treaty if we went that route or have somebody else abrogate it before we could go ahead without being accused of being in violation of the treaty?

General BURKE Yes, sir, it would have to be abrogated or substantially modified.

General ALLEN. Although, it is worthwhile remembering that the treaty did provide for defense of a single ICBM location. The limitations on how that defense was to be provided are what we are referring to when we say we don't think that an effective system as we can see it today can be constructed within the limitations in that ABM treaty.

There are some who would say that the modifications do not violate the spirit of the treaty which did permit some ICBM defense by ABM's and was in primary measure focused on avoiding broad area defense.

Senator WARNER. Senator Cannon, let me interrupt a minute. I was endeavoring to accommodate those members who want to go to the conference. As I understand, you were one and Senator Stennis was one.

I deferred my questions and I want to give Mr. Levin an opportunity. I intend to remain in open session through the hour of 11 a.m. at which time we will conclude.

Senator CANNON. Could I just ask one question and then I will go to the conference.

Senator WARNER. For the purpose of informing the witnesses we will conclude at 11 a.m., then we will come back for a second session at some mutually convenient time for closed testimony. In that interim I will be working with Senators Tower and Stennis to determine how we handle the question of clearance for the Stealth program among the membership and the staff.

You have another question and then we will go to Senator Levin.

Senator CANNON. I just wanted to ask, were those views made known to the administration, either the Secretary of Defense or the members in the executive branch as to the Air Force's views with respect to the posture of BMD in connection with the SALT Treaty?

General ALLEN. The administration was fully aware of the implications of the BMD and the ABM treaty, yes, sir.

Senator CANNON. I thank you.

Senator WARNER. Thank you, Senator Cannon.

Senator Levin, take 10 minutes.

Senator LEVIN. Thank you, Mr. Chairman.

What is the psi of the present Minuteman silo?

General ALLEN. That is a classified number, sir.

Senator LEVIN. Let me go to the figures on the B-1 because I think there have been cost overruns in the last couple of weeks, but we will try to find out.

Last April we were told that we could get 115 B-1's for $19.7 billion. We were told by the Air Force. Was that true?

General BURKE. Not 115, but 100 aircraft for $19.7 billion is the number.

Senator LEVIN. The Air Force did not tell us last April that we could get 115 for $19.7 billion?

General BURKE. I don't believe so.

Senator LEVIN. A few weeks ago we were told that we could get 100 B-1's for $19.7 billion; is that right?

General BURKE. Yes, sir.

Senator LEVIN. The Air Force apparently was using 1981 dollars for that, although we were already in fiscal 1982, correct?

General BURKE. That is correct.

Senator LEVIN. Then today you are indicating that there clearly has to be $400 million added to that for ALCM carriage and some radio systems, right?

General BURKE. Based on the Presidential decision and the direction we got from the Secretary of Defense.

Senator Levin. Yes.

General Burke. That was not our recommendation to do it this time.

Senator Levin. I understand. But that brings it up to $20.1 billion in 1981 dollars.

General Burke. Yes, sir. If I could just for the sake of completeness add internal cruise missile carriage as opposed to the external, which would cost $400 million. This would be about another $400 million. So if you would add that you would then get to $20.5 billion, and that is the number that Secretary Weinberger, I believe, used yesterday. If you will then take that from 1981 to 1982 you get to $22 billion.

Senator Levin. I don't know why you announce this in 1981 dollars when we are talking——

General Burke. Well, we announced this——

Senator Levin. It is all right. I don't want to spend my time on that. In any event, it is $20.5 billion now, in 1981 dollars. Let's stick to that—1981 dollars.

Now, today you have indicated you have deferred the cost of the simulators. Do you mean because you don't know the cost or you don't know if you need them?

General Burke. We know that we will need simulators. We are developing, the Strategic Air Command largely, a concept of training which will define the number and the quality of simulators that are needed.

Traditionally, we like for simulators to follow aircraft design and for the aircraft design in engineering detail to be well pinned down before we start to build a simulator so we don't have to——

Senator Levin. But you know you need them, in any event?

General Burke. In time. We also like to do the initial training in the actual airplane because we are trying to accrue early experience on it. So we like the simulators to run a year or two behind.

Senator Levin. All right, but you know you need them?

General Burke. We know we need it.

Senator Levin. Would a fair estimate be $300 million for the simulators?

General Burke. That is about right.

Senator Levin. So can we add $300 million to the $20.5 billion?

General Burke. Yes, sir.

Senator Levin. OK. We are making progress. That is another $300 million.

The Secretary didn't announce that yesterday, did he?

General Burke. I was not at his testimony and I didn't hear that.

Senator Levin. Now, what about the ALCM carriage? You say that you are going to add some cruise missile capability. Doesn't that mean you are going to require a second inertial navigation system?

General Burke. When we ultimately convert the airplane to a standoff cruise missile carrier, then I would expect that we would put in a second inertial navigation system. We will be accruing 75 of those when we retire the B–52D's.

Senator Levin. Would it be fair to say that it is reasonably certain you are going to need a second inertial navigation system on the B–1?

General Burke. In the fullness of time.

Senator Levin. Well, we are talking about what the B–1 is going to cost us in the fullness of time. So would a $200 million estimate be fair for that?

General Burke. I think that is much too high.

Senator Levin. All right—$100 million?

General Burke. Well, high-quality inertial navigation systems cost about $200,000 each. That sounds a bit high to me.

Senator Levin. Would $100 million be fair?

General Burke. No: that is high.

Senator Levin. Well, just give us a figure. I don't want to use all my 10 minutes on this. Give us a figure—$50 to $100 million?

General Burke. I don't want to give you something I can't back up——

Senator Levin. We know we are going to need those in any event.

General Allen. Senator, we made a conscious decision to incorporate a single precision inertial navigation system for the penetrating mission.

The question you are really raising is, do we anticipate that we will want to operate the B–1 in a standoff role with the cruise missiles where we need additional INS redundancy?

We, in fact, have not made a decision yet to go that way.

Senator Levin. I thought that was one of the purposes of the B–1, that we decided to add that cruise missile capability.

General Allen. We decided to add the cruise missile capability, but our conclusions are that the aircraft, well into the 1990's, will be operated in a cruise missile launch and then penetrate mode.

Senator Levin. So you haven't decided whether or not you need a second inertial navigational system?

General Allen. We have decided we do not need it for the——

Senator Levin. Someday you are going to need it, but not during the first period. Is that a fair way to state it or leave it?

General Allen. For the last——

Senator Levin. Let me leave it. It is only $50 to $100 million. I have got bigger fish to fry.

First of all, in your own report you said that the Air Force audit, just completed, says it will be 3 to 4 percent more than your estimate.

General Burke. By their methodology in their calculation, they come up with about a 3-percent higher number.

Senator Levin. Let's take 3 percent.

General Burke. Which is not to say that one is right or the other is wrong. It is to say that they are fairly close and appear to be reasonable.

Senator Levin. You said you were quite satisfied with that?

General Burke. Yes. I think generally 3 percent is regarded as a pretty good correlation.

Senator Levin. All right. Do you want to add another $500 million for the 3 percent?

General Allen. No, sir.

Senator Levin. You won't concede that?

General Allen. Well, no. It adds confidence to our judgment that we have estimated the cost correctly.

Senator Levin. What about the GAO published report? It says here that there is another $2.26 billion. Your response to the GAO report is that it depends on some military judgments which have to be made later on. Is that correct?

General Burke. It depends on a set of judgments, military judgments, as to what is required to have an airplane to meet the needs.

These include whether you do or don't need a FLIR, engineering judgments as to whether or not you need additional flight test hours, and management judgments as to what learning curve slopes are reasonable.

Senator LEVIN. Yesterday, we were told that a number of those judgments will be made in the next 2 to 3 weeks; is that correct?

General BURKE. I would say that the Air Force has made its judgments and they are now being reviewed by the Office of the Secretary of Defense.

Senator LEVIN. You don't know when they will be done with their judgment?

General BURKE. I would think within the next couple of days.

Senator LEVIN. All right. So we could know whether or not this is going to cost an additional $2, $3, or $4 billion, as I understand the testimony yesterday, in the next couple of days?

General BURKE. I have no expectation that there are going to be any changes of that magnitude that come out of that review.

Senator LEVIN. According to yesterday's testimony, first of all, Wade didn't know whether or not there was a permissive action link included in these figures. Do you?

General BURKE. The Air Force has not included a permissive action link.

Senator LEVIN. Should that be in there?

General BURKE. That is again a matter of judgment and there you could find some differences of opinion. The Air Force does not view that as a requirement and the Strategic Air Command does not view it as a requirement. It has an alternative system called the coded switch system.

Senator LEVIN. You are not going to recommend that one?

General BURKE. We have not recommended it. If we were told to do it then it would be additive.

Senator LEVIN. I just have a few minutes left.

Senator WARNER. Senator Levin, you are on a very important train of questions and I am not going to try and confine you to the rigid 10-minute rule. Just do the best you can and develop the case you wish to make. Don't rush.

Senator LEVIN. Thank you, Mr. Chairman.

It seems to me that what we have already is a system which you just a few weeks ago announced in 1981 dollars is costing $19.7 billion which apparently by everybody's acknowledgement today is up $1 billion to $20.6 billion when you add the simulators which you agree have to be added and which excludes your own independent audit of an additional 3 percent. You call that a safety feature, something which supports you, but putting that aside, it could go that high as you acknowledged. It excludes the $2-plus billion which the GAO recommends and which you indicate depends upon decisions which are being made by the Secretary of Defense which you say will be decided in a few days. Yesterday they told us a few weeks but, in any event, will be decided soon.

So presumably within the next 2 weeks we are going to know in constant 1981 dollars whether this is going to cost $20.6, $21, $22, $23 billion, whatever it is in constant 1981 dollars.

I think we ought to wait to find out. I think the GAO report as we have it, and today's Washington Post at least raises some critical issues. I think the other issues raised yesterday as to what was left out, such as the length that we talked about and there are a number of other items, including a fire control system, and we went through that yesterday, that those decisions are going to cost money.

I think we just have to wait, Mr. Chairman, for a few more weeks before we know what the DOD estimate is of this plane.

Frankly, I was surprised that you would use a $19.7 billion estimate in constant 1981 dollars when we are already in 1982, just to begin with. I thought that was misleading.

General BURKE. You have brought that up three times, Senator, and said you didn't have time to hear a response.

Senator LEVIN. Now I do.

General BURKE. I would like to make one. We produced the number of $19.7 billion in fiscal year 1981 and it is a number that has been established as the base year dollar estimate. Typically that is the way we report selected acquisition reports in base year dollars. Those numbers people become familiar with and so long as they are properly labeled 1981 dollars I don't think that they are misleading. It provides a base from which you can compare changes and make a track just as you are properly doing now.

Senator LEVIN. But if you were announcing it in 1982 why wouldn't you have switched it to 1982 dollars?

General ALLEN. Sir, we retain the base year dollars in the selected acquisition reports for long periods of time in order that Congress can more clearly understand what the baseline is we are addressing.

The arithmetic is easy. You take the OMB inflation number and apply it to that. It is really not very hard to do and Congress has directed us to report these things in a constant year basis in order that identification of changes can be considered.

Senator LEVIN. Let me switch for a moment to the IOC issue. Secretary Weinberger announced just a few weeks ago that the vigorous ATB program, the Stealth program, will lead to that plane's deployment under current plans beginning in 1989.

Do you agree with that, General?

General ALLEN. No, sir. The first aircraft is available in 1989. The operational capability that we discussed is a later date than that.

Senator LEVIN. Well, just that statement, do you not agree with it?

General ALLEN. When I said not agree, the first aircraft is available in 1989, yes, sir.

Senator LEVIN. In 1989.

General BURKE. We had better not go any further.

General ALLEN. We are having a little trouble because the classification of specific dates is there and I am trying to walk the line between the statement that Mr. Weinberger made and the other factors that relate to it.

Senator LEVIN. All right. But for that you would agree that the plane will become deployed, the first plane starting in 1989?

General BURKE. We would certainly not agree that the airplane is within 3 years of the B-1 availability.

Senator LEVIN. Could you repeat that? I was distracted.

General Burke. We would not agree with the implication, if that is what is intended, that the new technology airplane would only be 3 years behind the B-1.

General Allen. Sir, we will need to go into closed session where we can explain this more fully. The distinction is between first aircraft flights, initial operating capability, and production rates. These are all explainable but we need to get the accurate dates.

Senator Levin. Which one of those three do you understand to mean the plane's deployment.

General Allen. Well, sir, that is where the confusion is. It is my understanding that Mr. Weinberger has submitted a statement for the classified record which clarifies his statement.

Senator Levin. But which of the three particular times that you just identified is meant by plane's deployment in your words, just commonsense words?

General Allen. There is a date at which the aircraft first production model flies. There is a date then at which we assess whether the production rate is large enough and the accommodation in the inventory is such that we believe we have an initial operating capability.

Senator Levin. Let me rephrase the question and try to make it more direct. When will the ATB program, which is vigorous according to Weinberger, first be deployed?

General Allen. In the early 1990's, and a more specific answer, as well as we can give it, will be given in closed session.

Senator Levin. I will let those two statements stand side by side then because it seems to me there is a clear difference between what he said and what you now have just said and it is a critical difference. Let's all understand what we are talking about. You know, IOC's don't mean that much maybe to the public but they mean a heck of a lot to Congress as to whether or not the plane is going to first be deployed in 1989 or the early 1990's. That is a very critical difference because we are talking about laying out some $20 billion, assuming that it doesn't go up.

General Allen. Sir, let me assure you, and we can do this better in closed session or with additional testimony or however you want it, Mr. Weinberger and I are attempting to read off the same data sheet and we will explain that more fully. There is no uncertainty in our minds of what we intend to say. There is obvious difficulty and it is complicated in open session by the actual words used to say it.

Senator Levin. I think there is another difference also between you and the Secretary because you indicate that the psi of the existing shelters is classified and he disclosed in public session what that psi is.

General Allen. Yes, sir, that sounds like a difference. I agree. [Laughter.]

Senator Levin. It is more than a difference. If you are right it is a difference which involves a violation of the United States Code.

We talk about classified documents around here, Mr. Chairman, and it is serious business. As far as I am concerned, it is serious business, so serious that the matter came up in a recent debate of some fame. But putting that aside, I mean for General Allen to tell us that that is a classified figure when Weinberger casually told us what the psi was 3 weeks ago, I think is a very, very serious difference between the Air Force and the Secretary of Defense. It may not be more serious, but at least as serious as some of the differences in the figures that we have been getting.

General ALLEN. Sir, first, I don't know what Mr. Weinberger said so I am handicapped by that.

Senator LEVIN. Well, let me help you out because I don't want to handicap you.

General ALLEN. Mr. Weinberger has substantial authorities in the area which I don't have. Therefore, we will conclude that his decision on what can be released is proper and authoritative.

With regard to the costs, these costs——

Senator LEVIN. Well then, you are not at a handicap. Apparently if you have reached that conclusion that he can testify in the way he did without any handicaps, then I guess I won't even read his testimony to you because his testimony is very clear, what the psi is of the present silos and what we are going to harden them to withstand.

Senator WARNER. Would you identify where the testimony is?

Senator LEVIN. On page 8.

Senator WARNER. In what forum, Senator?

Senator LEVIN. October 5 before this committee.

> We will continue development of the MX missile, procuring a hundred operational missiles and provide for an initial deployment of a limited number, probably 36, in Titan or Minuteman III silos reconstructed to provide superhardness to nuclear effects.

We are talking about withstanding a hardening to withstand up to 5,000 psi. Now in terms of the present psi, and it appears on page 10:

> In fact it would be even more so because the proposed MPS shelter would be quite soft, 600 psi as compared to the existing 2,000 psi on the present Minuteman silos.

That is page 10, public testimony.

Senator WARNER. Of course the Senator is aware that the Secretary of Defense is the ultimate authority on the question of declassification. I have seen it many times, and occasionally that declassification takes place instantaneously in testimony. [Laughter.]

Senator LEVIN. Well, I would hope that he would notify his generals when that declassification takes place so that weeks later we are not told that a figure is classified. If in fact the Secretary can instantaneously do it, then I would hope he would transmit such information. I am not sure you can do it that way, but nontheless the point has been made.

Let me just ask one further question on the dollars.

Senator WARNER. Let me just say that I think our witnesses are doing the best they can to respond to your inquiry. They have to follow very carefully DOD procedure for purposes of declassifying information. I think the General is saying that before he could acknowledge or verify other statements he would want to follow that path.

Senator LEVIN. Well, we will let the statement stand for itself. The cost of $5 to $7 billion which was given here for, I believe, the basing mode, is that the first time that figure has been announced because we have been trying to get a figure for the cost of the basing mode for some weeks around here. We are told that the whole MX system I think costs $21 billion. We have been trying to split out the cost of the missile from the cost of the basing mode because some people have different opinions about those parts of the system.

Is that $5 to $7 billion a constant 1981 figure or is that a constant 1982, and does it relate to the cost of the basing mode as described by the Secretary of Defense?

General Burke. In constant 1982 dollars we estimate that to produce 100 operational MX, which is actually more than 200 missiles for the test vehicles, costs $13.8 billion. So the remainder of that $21 billion in constant 1982 dollars is associated with the basing mode. The basing mode, as we have indicated earlier, is not precisely defined at this point in exact numbers and in exact locations.

Senator Levin. All right. So you get the cost of the basing mode by deducting the $13.8 billion for the missiles from the $21 billion for the total program and that comes out, according to this, to $7.2 billion.

Now where did the five to seven cost come from?

General Burke. There is a difference in cost whether you do it in Minuteman, whether you do it in Titan, which of the fields you use, whether you go to more than one Titan site. Those things all impact on it.

Senator Levin. But the figure for the purposes that we can use in chatting with colleagues——

Senator Warner. Senator Levin, I don't wish to interrupt you. You have had considerable time, which I am delighted to give you, but they have also asked that you appear at the conference right away.

Senator Levin. Thank you so much for the time and the reminder.

Senator Warner. Now I first asked the panel if they would like to have an opportunity to take a little time to further clarify any of the points raised by my colleagues in their questions.

General Allen. I would like to clarify one point or really amplify one point with regard to the basing situation and ask either General Burke or General McCarthy to comment further if they think it is appropriate.

There is a little bit of confusion between the incremental cost of hardening a silo, which is a rather small number, and this number which we have been discussing which is a large number.

Senator Warner. That being the five to seven?

General Allen. Yes, sir. It is necessary to call attention to the fact that the majority of those expenses are the necessary development and going into production associated with a whole range of things such as the transporters, the loaders into the silo, the erection mechanism and support system within the silos—a whole range of activities which are included in the total basing item but are not actually a cost to harden the silo.

Senator Warner. I think the record should be very clear that you were asked to give these figures on the 3d of October and you recognize a certain imprecision in these estimates at this time.

General Burke. Yes, sir. Just to state General Allen's point another way, if we were charged to put them in silos and accept whatever hardness is already there, that $5 to $7 billion would be about $4 to $6 billion, about a billion dollars less.

Senator Warner. Do you have the technology, the state of the art to harden up to 5,000 psi?

General Burke. Yes, sir. There are some fairly important qualifications that ought to go with that perhaps in closed session. But, yes, sir, we can build a 5,000 psi silo.

Senator WARNER. Now, during the questions on the B-1 there was a question about the addition of certain equipment so that there would be cruise missile carriers and we got into this standoff versus penetrating or combination role. I think it would be helpful, General Allen, if you would define the mission of the B-1 and how you are designing to that mission.

What is the range of the mission and what are the design features that must be incorporated in the plane to reach that definition?

General ALLEN. Let me outline briefly and then ask General Burke to amplify.

The criteria used in selecting the approach to the B-1 included the necessity for it to penetrate extremely capable Soviet defenses in the 1990's. Our decision to proceed with the B-1 is based, at least in part, upon our confidence that it will be able to do that.

So it is, in our view, a penetrating bomber which means it must have those electronic countermeasures and equipments associated with that mission.

Now, in addition, the aircraft will have the capability from the outset, by the President's decision, to carry cruise missiles. Initially externally and subsequently internally. There are several different doctrinal thoughts about how those might best be used.

The one that I favor at this time is that they will be used to increase the total weapons carriage capability of the B-1 such that it will be a carrier of cruise missiles to the launch point and then a penetrator with a full load of internal weapons.

Now there are others who would argue for somewhat different tactics as being the optimum use of the aircraft, but it will have the flexibility to be used in either way.

Now the third capability that we have asked of the aircraft is that it be configured such that it can be an effective conventional bomber. That is, that it can go into remote areas with conventional weapons and attack Soviet provided defenses with a good deal of capability. That has been designed into the aircraft and it has led to one of the variations in the aircraft from the 1977 version. That is an increase in the gross weight of the airplane which is largely to increase its conventional bomb-load capability because we assign importance to that.

A fourth capability deals with maritime support. That is the provision of a ship-killing weapon for support to the Navy in keeping the sealanes of communication open. That is a mission for which the system will have inherent capability but for which at the moment we are putting at a lower priority and not providing the full weapons integration for that role.

In association with any of its missions we are assuring that it has the capability to go after imprecisely located targets. That means that it has the proper integration and capabilities in its radar system and other means to insure that it can find targets which are classified as mobile. This clearly does not mean chasing trucks down the road, but mobile in the sense of major forces that will move from one place to another.

Senator WARNER. What about the altitude, range, and things of that nature? How much can be brought out in the open now?

General **Burke**. An essential component of its ability to penetrate highly defended areas successfully is a combination of low altitude and high speed. The B–1 has been developed, tested, and has demonstrated a capability to fly at 200 feet in an automatic terrain-following mode at a speed of 0.85 Mach, 85 percent of the speed of sound, with dash capability up to 0.95 Mach. At altitude it has a slight supersonic capability on the order of 1.2 Mach, 120 percent of the speed of sound, but we don't see much use for that. It was for that reason that we backed off the higher speeds at altitude that we had in the earlier version.

It is a large airplane, and it is going to have a maximum gross weight of 477,000 pounds which is almost what the B–52's operate at now. They are 488,000 pounds.

It consequently carries very large payloads, either nuclear weapons or conventional weapons. We could supply for the record a range of those because there is just a very large number of things that it can carry and it can carry them to very long ranges. A B–1, as we would now build it, with a substantial load would be able to fly unrefueled a typical strategic mission over 5,000 miles and with one refuel it could fly over 7,000 miles.

Senator **Warner**. Gentlemen, it may well be that if the Congress determines that there are insufficient funds to proceed on both of these programs, the two-bomber program, and, as you say, although it is sequential, there are large dollar amounts required in each of the fiscal years. In the event the Congress determines that it cannot fund the two programs and the Congress returned to you with the decision to go on either the B–1 or the ATB, which would be your first priority?

General **Allen**. Sir, I would regret very much having to make a choice like that because I think the country needs and will benefit by a program which permits us in the 1990's to have a very exciting capability.

However, I would see no alternative, if I were forced to that choice, and that is that I should go ahead with the B–1. The reason is my concern for the strategic balance and the importance I feel for a near-term and highly credible address of the issues between the United States and the Soviet Union with regard to strategic weapons. I do feel a strong obligation to be able to prosecute a program in a period of time in which I think there will be economic difficulties, a program whose costs, schedule, and performance I can control.

In spite of the rather severe questioning which we received today, and I am sure we will receive more of it, there is no reservation in my mind that this program is well controlled in cost and that we can control it. We are starting from a higher basis of prior development and flight tests than we have for any program in years. We can make it with proper discipline, a well-controlled program that meets its objectives in an economical way.

Senator **Warner**. General, returning to that question of cost, and I will have to wait and see how this session is reported to determine if we have clarified or further confused the issues, but nevertheless, I have this draft copy of the GAO report and I have looked through it and those of us who have dealt with it through the years know that drafts are often changed.

My understanding is that some of this draft report has already been changed. Therefore, would you want to comment on the changes and how that might clarify the discrepancies that have been raised and prompted by this draft report?

General **Burke**. We have prepared a set of responses to deal with each item in the draft report. In a sense it might not contribute to the debate in that I think you are absolutely correct that it will be moderated and changed before it is published in final form. We would be happy to furnish immediately to you then, our response to that final report.

Senator **Warner**. But you have the expectation that as you prepare the responses to this draft report that the ultimate report will, if in fact there are discrepancies, be somewhat moderated from what they are as of now?

General **Burke**. That is the typical pattern with GAO reports.

Senator **Warner**. I am familiar with that.

General **Burke**. I would hope that would be the case. I think we have a clear understanding of every item of concern in there. We would appreciate it if you would bring them to our attention. We have revisited each of those. We spent several hours just yesterday in the Air Force Council going through that and we are satisfied that we are on firm ground.

Senator **Warner**. Returning to the MX question, General Allen, in your opening statements you used the words "my advice was not taken." And, second, that "there was an Air Force preferred position on this." Have you had ample opportunity to provide in this record what your reasons were for the MPS and deceptive basing concept, the one the administration has now directed you to proceed on?

There were two lines of reasoning that you were responding to Senator Cannon, and I kept careful notes. You detailed the President's line of reasoning and said you comprehend it, but you left the clear impression that it was your line of reasoning which supported your decision, and now I presume by deduction that your decision was that this Nation should continue to pursue an MPS deceptive basing scheme for the MX missile.

I just want to give you the opportunity now to clarify the record and put your position in it.

General **Allen**. Yes, sir, I am happy to do that. I do want to make clear that I do not wish to prolong a discussion about a decision which I think has been clearly and unambiguously made.

Senator **Warner**. Nevertheless, this record will be used by all Members of the Senate as they individually address these issues. In fairness to them I think that this record should contain your approach and your reasoning.

General **Allen**. Yes, sir. We have discussed, in general, the basis of the MPS system and the President's concern about the balance between that and the expectations of the Soviet threat.

Now, where I would have a slightly different viewpoint, one that leads me to a different conclusion, is that in the circumstances where a high Soviet RV threat is projected and going along with that is also the fact that the Soviets will have placed a very large fraction, an increasingly large fraction of their striking power in their ICBM force. That has two characteristics.

One of them is that if the MPS deployment is attacked by them effectively, and even if it is in a situation where they have about as many RV's as we have targets which they have to attack——

Senator Warner. By targets you mean shelters there.

General Allen. Shelters, yes, sir, but also the other things they have to attack.

Senator Warner. I understand that, but let's make it clear that that doesn't necessarily limit it.

General Allen. Under circumstances where their RV's are postulated to be numerous enough to be able to afford to expend all of those it has the effect of disarming them. Therefore, when they would contemplate any such attack they would have to accept a disarming characteristic of their first strike.

On the other hand, they couldn't ignore the necessity to protect their missiles because the surviving MX's would have the capability of tearing apart whatever part of their ICBM force was remaining. So they would be in the position of either disarming themselves completely——

Senator Warner. In the first strike.

General Allen. In the first strike. Or trying to preserve that portion of their force that was withheld and then having that force be extremely vulnerable to our counterattack with MX's.

It was my conclusion that the result of that, which led me to continue to recommend the MPS, was such that the contribution to deterrence and indeed even to war fighting considerations of the MX in an MPS system was sound.

Now the President's view was different. He felt that if that balance was incorrect then the system was fundamentally vulnerable.

I will confess that my views have been affected by probably a somewhat more hopeful approach to the future of arms reductions. That is, that I believe that the MPS system would have provided a circumstance from which arms reductions could have been negotiated in a particularly effective way with the Soviet Union and that that would influence the total outcome of the situation we would face in the nineties.

I think it is the policy of the present administration that one should address those two things sequentially. That is, one should insure that our strength is sufficiently based on projections that are only limited by Soviet capabilities and then proceed with arms reductions.

Senator Warner. So by inference you are saying that the course on which we are now embarked under the administration program is one which complicates any future arms reductions more so than an MPS system? Is that an incorrect inference?

General Allen. Well, it is only that I want to distinguish between explaining the views that led me to recommend MPS and the views which the President has informed me are the national policy. So there is the distinction. That is, our policy is to correct our arms situation and move then to arms reductions.

Senator Warner. Senator Humphrey?

Senator Humphrey. Thank you, Mr. Chairman.

Good morning, General.

Is there a date specified for IOC on the advanced technology bomber?

General Allen. Yes, sir, there is such a date.

Senator Humphrey. What is it?

General Allen. We have in open testimony described that only as the early nineties.

Senator WARNER. We have covered that line of questioning fairly carefully.

I wonder if the general would summarize for Senator Humphrey your testimony on that.

General ALLEN. Yes, sir.

Senator WARNER. And explain the problem versus open and closed.

General ALLEN. Yes sir, the problem is that in open testimony the dates with respect to B–1 first flight and IOC are available. The dates with respect to first flight and initial operating capability of an advanced technology bomber aircraft are classified and we can discuss them in closed session.

However, there had been various references intended to provide some illumination to this and they have included references which the Secretary of Defense made to aircraft being available beginning in some time period like 1989 and we have talked about operating capability in the early nineties.

Senator HUMPHREY. I don't mean to be repetitious, but what would be the implications if we did not build a B–1 and continued to rely on the B–52 and found later on that the ATB was more difficult to develop than we had anticipated and would be coming on line later than anticipated? What are the implications?

General ALLEN. Well, of course, that is exactly the problem we have tried to assess. It is our conviction that the B–52's will have marked reductions in their ability to penetrate the Soviet defenses beginning the middle of this decade, beginning in 1985 and, as best as we can forecast, running out of their ability to do a penetration role by the end of this decade.

For that reason we are converting those aircraft to cruise missile carriers and over the 10-year period we will convert them more and more to cruise missile carriers and be forced to rely less and less on their ability to penetrate Soviet defenses.

If we then did not proceed with the B–1 we would be putting the country in the position during a decade in which the strategic balance is a long way from where any of us want it of placing a very great reliance on an uncertain aircraft for a period of time in which it is clear we would have to run out of capability to go against those Soviet defenses.

Senator HUMPHREY. I saw a press report in which it was stated that one of our colleagues had been briefed. I think, by the CIA to the effect that there would be no appreciable difference in capabilities in terms of penetrability between the B–1 and the B–52. I think the timeframe was in the early 1990's. Can you comment on that?

General ALLEN. There has been a little confusion in that kind of testimony because there had been various discussions and in various kinds of sessions with the Congress by both DIA and CIA. I believe I understand, although we are, in fact, checking today with Mr. Hoffstetler to be sure we understand clearly what he was saying.

Did you speak to Mr. Hoffstetler this morning?

General BURKE. Not directly, but my office spoke with him this morning on an open line and all he could say was that he was misquoted and we were going to get back with him on a secure line and find out what the details were.

I would disagree as strongly as I know how to with any argument that there is no difference in the penetration capability of those two airplanes. The observability of a B–52 is two orders of magnitude, a hundred times that of what a B–1 is expected to be. The speed is much, much slower. We are putting an electronics set in the B–1 that is many years newer than what is in the B–52, particularly in regard to the defensive avionics. There is just a marked difference between the capabilities of those two airplanes.

Senator HUMPHREY. That, of course, is only half of the equation. The other half is the Soviet intercept capability or shoot-down capability. In that context you still feel that the press report was significantly misleading, that in fact the B–1, in the context of Soviet capability in that timeframe, that the B–1 will still have a marked advantage as a penetrator over the B–52?

General ALLEN. Oh, yes, sir, there is really no comparison between the two because our conviction is that the B–52 is clearly running out of steam as a penetrating aircraft.

Senator HUMPHREY. Do you have some that are steam powered? I didn't know that they were that old. [Laughter.]

General ALLEN. Almost. They will be more than 30 years old.

General BURKE. Senator Stennis introduced the subject of steam power before you got here.

General ALLEN. The large radar cross section of the B–52 puts rather fundamental limits on what we can do in terms of electronic countermeasures. We project Soviet defenses beginning in 1990, which is a somewhat arbitrary date but nevertheless is a date, as being composed of an effective combination of techniques we believe they now have at their disposal and are similar to the most advanced aircraft and techniques that are available today to the United States.

That is a generous assumption to the Soviets; that is, that they can bring all of that to bear because it would be a very expensive program.

But against those defenses we are confident that the B–1 will have a good penetration capability and remain so through a large portion of the 1990's as well as we can forecast these matters. We don't know how to do that with the B–52. In fact, the program for the B–52 in any event will be one in which we will use it as a cruise missile carrier as we lose confidence in its penetration.

Senator HUMPHREY. Thank you, Mr. Chairman.

Senator WARNER. I think this is an appropriate time then. We will terminate this session and it looks as if we are going to have to have further open testimony.

We thank the witnesses for their appearance.

I will submit questions for the record.

[Questions with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JOHN W. WARNER

RURAL AND URBAN COMMUNITIES CONCERN

Senator WARNER. General Burke. Isn't it true that numerous rural and urban communities have refused to permit radioactive waste material—much of which is far less hazardous than MX warheads wou'd be—to be shipped on roads passing through or nearby them? That aspect of public interface alone—to say nothing of questions concerning the system's physical security, C^3 reliability and vulnerability to barrage attacks and targeting would seem to represent a significant problem, even if the others didn't. Would you comment? Were these among the reasons why the Air Force did not support the road mobile MX?

General **Burke**. Because of the many design safety features we would not regard the MX warhead as dangerous while in transit. However, the same opposition that has been expressed for movement of radioactive waste material is also likely to be aimed at mobile MX.

Clearly, public willingness to accept movement of MX through and near communities and on public roads is a major reason why the road mobile basing mode has not been accepted. Additionally, the size of the MX missile, as it is currently designed, is simply too large to effectively travel on our current highway system.

SHOOT AND PENETRATION MISSION FOR B-1

Senator **Warner**. Generals Allen and Burke: Have you assessed the tanker requirements associated with a shoot and penetrate mission for the B-1?

Answer. Yes, we have. Our assessment is that there will be less of a range penalty associated with cruise missile carriage on the B-1B than on the B-52. The B-1B will experience a drag increase—approximately eight percent—which is less than the 15 to 25 percent drag increase of a B-52 equipped with external missiles. This translates into a somewhat lower tanker requirement for a B-1B force than a B-52 force of comparable size and configuration. However, the fact remains that our tanker requirements for strategic bombers will still increase as cruise missiles enter the bomber force.

KC-10, KC-35 REENGINING

Senator **Warner**. Generals Allen and Burke: How would the decision to kill the KC-10 and delay the KC-135 reengining programs affect our ability to meet these tanker requirements?

Answer. The changes to which the question refers will simply delay the Air Force's plans to alleviate the projected refueling shortfall. Our objective is to meet the requirement with programs such as the KC-10 and KC-135R which would match increases in tanker capability to the corresponding increases in refueling demand.

TANKER REQUIREMENTS

Senator **Warner**. General Burke: Would you provide the subcommittee for the record with your estimates of the range of tanker requirements associated with the Carter administration's bomber program and the Reagan administration's bomber program—both before the October budget changes related to KC-10 and KC-135 reengining lines, and after.

Answer. With respect to the reductions in the KC-10 and KC-135 reengining as a result of the October budget changes, the requirement for refueling has remained the same. The reductions were based solely on fiscal constraints or priorities with no decrease in the requirement. The only change is the Air Force's ability to meet that requirement.

With regard to changes in the bomber program, SIOP tanker forecasts for the Carter bomber program showed a need of [deleted] KC-135A equivalents in [deleted]. On the other hand, President Reagan's modernization decisions will alter that bomber force significantly. Under the Reagan proposal, the SIOP tanker requirement will be [deleted] KC-135A equivalents in [deleted]. To this must be added the [deleted] KC-135A equivalents required for contingency operations, Rapid Deployment Joint Task Force, and other conventional missions. In the outyears, with a growing fleet of air refuelable aircraft (fighters, bombers, and airlifters), the requirement for tankers will continue to increase.

STRATEGIC POLICY DOCUMENT, PD-59

Senator **Warner**. General Burke, to your knowledge, has the Reagan administration decided to scrap or otherwise revise President Carter's strategic policy document, PD-59?

Answer. I understand that the Reagan administration is reviewing all Presidential Decisions from the previous administration. I believe the Office of the Secretary of Defense would more appropriately be able to respond to your question.

PRESENT STRATEGIC FORCE MODERNIZATION PROGRAM

Senator WARNER. General Burke, in your personal, professional judgment, is the present Strategic force modernization program as consistent with and supportive of PD-59 as was the program endorsed by President Carter?

ANSWER. Most definitely. The present Strategic force modernization program is consistent with and supportive of national strategic policy. In fact, the current program better supports such policy by emphasizing the development of more survivable, more enduring, and more effective weapon systems.

AF PRIORITIES C^3

Senator WARNER. What are the Air Force's own priorities for Strategic C^3 modernization?

ANSWER. The Air Force position in regard to C^3 modernization seeks to achieve a systems approach to the development and acquisition process. The goal is to achieve the proper balance between the validated force structure and the C^3 network which supports it. In the existing climate of fiscal constraint and evolving policy guidance, this goal is not easily achieved. Highly legitimate but divergent positions are held concerning the proper balance; however, there is no question that C^3 systems must be as survivable and enduring as the component systems of the force structure which they support. Accordingly, the Air Force has developed a prioritized, system-oriented list of strategic C^3 modernization programs which will be pursued aggressively. A summary statement of those programs is as follows:

[Deleted.]

ATTAINING THE OBJECTIVES

Senator WARNER. What relative importance do you attach to attaining the objectives of high confidence pre-strike connectivity, improved attack assessment and extended durability?

ANSWER. In listing our priorites for achieving those objectives, we would rank our first requirement as [deleted].

If we assume the [deleted] our existing systems support this priority. Planned upgrades to the commercial terrestrial and satellite systems will [deleted].

Our ability to characterize an attack in support of the function of the NCA, to enhance the survivability of the weapon systems and thus their ability to respond accordingly and our ability to endure until the termination of hostilities, all require differing levels of information which could be defined as [deleted].

Prior to upgrading the level of detail in our information transfer and warning capabilities, our priority for resource allocation is toward programs necessary to enhance a more [deleted]. In this context then, we will strive to improve the [deleted].

[Whereupon, at 10:58 a.m., the subcommittee adjourned, subject to the call of the Chair.]

STRATEGIC FORCE MODERNIZATION PROGRAMS

FRIDAY, OCTOBER 30, 1981

U.S. Senate,
Subcommittee on Strategic and
Theater Nuclear Forces,
Committee on Armed Services,
Washington, D.C.

NAVY STRATEGIC PROGRAMS

The subcommittee met in open session pursuant to notice, at 8:44 a.m., in room 212, Russell Senate Office Building, Senator John W. Warner, chairman, presiding.

Present: Senator Warner and Senator Nunn.

Staff present: Rhett B. Dawson, staff director and chief counsel; James F. McGovern, general counsel; Brenda K. Hudson, assistant chief clerk; Frank J. Gaffney, Ronald F. Lehman, José M. Martinez, David S. Lyles, E. George Riedel, James C. Smith, professional staff members; Mark B. Robinson, research assistant.

Also present: Buzz Hefti, assistant to Senator Warner; Jim Dykstra, assistant to Senator Cohen; Bill Furniss, assistant to Senator Quayle; Frank Krebs, assistant to Senator Cannon; Robert Nichols, assistant to Senator Jackson; Arnold Punaro, assistant to Senator Nunn; Greg Pallas, assistant to Senator Exon; Peter Lennon, assistant to Senator Levin.

OPENING STATEMENT BY SENATOR JOHN W. WARNER, CHAIRMAN

Senator Warner. In recent years, as the Soviet Union has begun to deploy the improved ICBM's and air defense systems which have been made possible by large and sustained investments in strategic systems, the sea-based leg of the U.S. nuclear deterrent has taken on significantly increased importance.

Fortunately, at the same time as a greater and greater responsibility for maintaining the peace and deterring nuclear war has fallen to the Navy, its ability to perform this role has been substantially enhanced.

The latest component of this enhancement, the *Ohio*-class Trident submarine, will be shortly entering the fleet.

Let me correct that. Didn't I see where it entered yesterday?

Admiral Williams. Mr. Chairman, the ship has been delivered to the Navy. It has not yet been commissioned.

Senator Warner. That is correct, but it was delivered 3 days early, wasn't it?

Admiral WILLIAMS. Yes, sir.

Senator WARNER. What was the date?

Admiral WILLIAMS. The date was the 28th.

Senator WARNER. As one who has been involved in the inception of the Trident submarine program, I fully appreciate the enormous contribution the U.S.S. *Ohio* and her sister ship will make to the Navy's ability to carry out its critical strategic missions into the 21st century.

Today, in this the fifth of our hearings on the strategic force modernization program announced by the President earlier this month, we will focus on the Trident submarine program and other components of the President's plan as they relate to the Navy.

Specifically the committee will be considering the Trident II/D-5 missile system, now given a go-ahead for development, a go-ahead subject to the Congress. We were still working on it as late as 8:35 last night in the conference. I am pleased to report to you this morning that the conference approved the last item at 8:35 p.m. last night.

We will discuss the decision to deploy land-attack, nuclear armed cruise missiles aboard attack submarines and we will review the status of planning for basing the *Ohio*-class submarines. While we have a subsequent hearing dealing exclusively with command, control and communications aspects of the President's program, we will be considering the Navy's C^3 requirements as seen from the operational side of the service.

It is a pleasure, a great pleasure, if I may say, to welcome the distinguished and able officers who will address these questions as our witnesses this morning: Rear Adm. William A. Williams III, director, Strategic and Theater Nuclear Warfare Division, Office of the CNO; Rear Adm. Frank Kelso, Director of Strategic Submarine Division and Trident Program Coordinator; Rear Adm. Walter Locke, Director of the Joint Cruise Missile Project Office; and Rear Adm. Glenwood Clark, Strategic Missile Projects Office.

Admiral Williams, you may proceed.

STATEMENT OF REAR ADM. WILLIAM A. WILLIAMS III, U.S. NAVY, DIRECTOR, STRATEGIC AND THEATER NUCLEAR WARFARE DIVISION, OFFICE OF THE CNO, ACCOMPANIED BY REAR ADM. FRANK B. KELSO II, U.S. NAVY, DIRECTOR, STRATEGIC SUBMARINE DIVISION, OFFICE OF THE CNO; REAR ADM. WALTER M. LOCKE, U.S. NAVY, DIRECTOR, JOINT CRUISE MISSILE PROJECT OFFICE, OFFICE OF THE CHIEF OF NAVAL MATERIAL; AND REAR ADM. GLENWOOD CLARK, U.S. NAVY, DIRECTOR, STRATEGIC MISSILE PROJECTS OFFICE, OFFICE OF THE CHIEF OF NAVAL MATERIAL

Admiral WILLIAMS. Mr. Chairman, thank you very much.

My function as the Director of the Strategic and Theater Nuclear Warfare Division in the CNO's Office is to serve as a focal point for Navy nuclear matters, and it is there that we undertake a translation of the national policy and the Navy requirements and assess how well we are meeting those objectives.

With your permission, I would like to speak unclassified for the record and give you an overview of the Navy's strategic program as we see it as a result of President Reagan's announcement on October 2. Afterwards my colleagues and I would be pleased to accommodate any of your technical or policy concerns.

It was last February that my predecessor testified to this committee. At that time the Navy did not have an approved Trident II program. Rather, we had an advanced development program for an improved sea-based ballistic missile system.

We would have had a selection sometime in fiscal year 1983. The funding was provided for a missile with an IOC of 1990. Since my predecessor testified to this committee, the Secretary of Defense has directed the Navy to proceed with development and initial deployment of the Trident II missile. The IOC is to be in 1989.

Now it may be possible that the IOC can be advanced somewhat. That is a matter that Rear Adm. Clark to my left is looking into at the present time.

Also, since the last testimony to this group the first Trident submarine, the *Ohio*, has been to sea and she has enjoyed highly successful sea trials. In fact, she has exceeded performance goals in many critical areas.

Within recent months the backfit of the Trident I (C-4) missile into seven Poseidon submarines has been completed. Incidentally, I might comment that that Trident I missile has performed significantly better than its own design goals.

The last five Poseidon submarines scheduled for backfit are undergoing that process at the present time and the entire 12-ship program should finish in September of next year.

Later in this decade, as a result of the President's decision, the Trident II (D-5) missile will add an entirely new dimension to our sea-based capability. It will also enhance considerably some of our current capabilities.

Most conspicuously will be the fact that for the first time the United States will have a sea-based missile system that is effective across the entire target spectrum from hard silos, including command and control facilities, to the softer military and war supporting industrial targets. This very characteristic is essential to our current strategy.

Of tremendous importance is the fact that the missile will be in a truly nontargetable and fully survivable basing mode. Thus the Navy will have, and the Nation will have, no pressures upon it to use or lose the system and this of itself will be a powerfully stabilizing influence in a crisis situation.

Furthermore, our SLBM survivability will not be coupled to any Soviet proliferation or qualitative improvement of their strategic forces. Therefore, the Nation and the Navy can determine the size of its Trident force with military capability and requirements as the principal entering argument. There will be no need to proliferate systems to compensate for the lack of survivability.

There is another important attribute of the Trident II missile, and that is that it will provide an increment of invulnerable, hard target kill capability with each submarine that goes to sea. Thus, there will be an inducement to the Soviets to move their strategic forces into a more survivable basing mode as each increment of incentive is applied in a measured and deliberate fashion.

This U.S. move to incorporate greater capability into nontargetable systems should provide the leverage and incentives for the Soviets to deemphasize their large throw weight but potentially vulnerable, ICBM force. This could then set the stage for meaningful arms reductions without impacting on either side's legitimate military needs.

Senator WARNER. I am glad you mentioned that. We possibly have in attendance this morning some who take an unusual interest in that side of the ocean. I hope you emphasize that in your testimony, as the other witnesses have, that this buildup directed by President Reagan is with the hope in mind that someday we can reach meaningful and balanced arms control limitation agreements and that there is no lack of determination on the part of our President and the Congress to go forward with this program until such time as those arms control agreements come into being.

Admiral WILLIAMS. In talking about those notions I have in fact stressed the survivability of the submarine-launched ballistic missile system.

In order to reaffirm that idea let me just comment that during the recent years and recent months a broad range of analyses have been accomplished by a range of people, the CIA, the DIA, the Navy itself and Rand Corp., as commissioned by the Air Force. Their findings are unanimous that the submarine launched ballistic missile force is essentially invulnerable today and will remain so for the foreseeable future.

The Navy sees no complications resulting from President Reagan's D-5 Trident II decision. In fact, we see that the D-5 for a total given expenditure will provide much greater capability than our present C-4 missile.

The new missile will have about 75 percent more payload than the current C-4. It will have major improvements in accuracy over the C-4, it will have a full payload range comparable to that of the C-4, and like the C-4, should we so choose, it can have a greater range by removing some of its warheads. It will have flexibility in that the front end will be designed to receive warheads tailored to the target assignment itself.

The Navy has developed an acquisition plan designed to optimize the performance of the missile. We intend to continue to use the same management philosophy and plan that has proved so successful in the past. In essence, the Strategic Systems Project Office under Admiral Clark, again to my left, will function as a prime contractor and integrator of the numerous subcontractors responsible for the various aspects of the weapons system. Specifically we will utilize to the extent possible those subcontractors who have performed successfully in previous missile development and production.

This coupled with avoiding revolutionary, high risk development efforts will shorten the development period. It will contain the total costs and will minimize risks.

Now the concept of the Trident II missile was actually looked at and examined from fiscal year 1978 to fiscal year 1980. This effort explored the full spectrum of accuracy improvements, range, footprints and payload. From the investigations the Trident II program has developed.

Advanced development commenced in 1981. The speci c objectives of that advanced development program include developing selected components and subsystems to reduce acquisition lead time and to define optimum missile configurations, developing to prototype of a new guidance system and pursuing major missile and propulsion improvements throughout ground testing.

Moreover, since fiscal year 1975 the Navy has been conducting the improved accuracy program. That program directly supports the development of Trident II. The program's purpose is to develop the ability to predict with confidence the costs and schedules associated with achieving accuracy improvements in future missiles.

Although that program will not be completed until the end of fiscal year 1982, the developments to date provide very high confidence that the required accuracies will be achieved.

Thus, three major elements of the acquisition program, continuity in project manager, a sound development program and the improved accuracy program gives the Navy great assurance that the Trident II program will optimize the missile performance.

SUBMARINE RETIREMENTS

Turning to the submarines. As you know, we plan to retire the 31 *Poseidon* hulls after each reaches its nominal life of 30 years. The first hull will retire in fiscal year 1993 and the last in 1999.

We expect the Trident submarine building rate to proceed at one per year. The initial D-5 missiles——

Senator WARNER. Excuse me, Admiral. I might just interject that the retirement program was planned in accordance with the terms and conditions of the SALT I agreement, isn't that correct?

Admiral WILLIAMS. No. My comment does not specifically accommodate any past or postulated SALT agreement. That comment just assumes a 30-year life and the first submarine will retire in 1993 and the last submarine will retire in 1999.

Senator WARNER. Well, I think it is tied in.

Admiral WILLIAMS. Excuse me, sir?

Senator WARNER. I think it is tied in with the SALT I agreement, some of those retirements of the hulls.

Admiral WILLIAMS. In closed session I can show you a profile of what the introduction of retirement of submarine hulls would look like and give you a feel for——

Senator WARNER. I am quite aware of that. I just wanted to make that observation.

Admiral WILLIAMS. Now, the Trident building rate. We expect to proceed at one per year as indicated by the President. The initial D-5 missile will be installed in early Trident submarines which will undergo a conversion from a Trident I capability to a Trident II capability. That first submarine is expected to deploy in 1989.

Under our current plans the first new Trident submarine that will be initially configured for the Trident II missile will be the 13th ship scheduled for delivery in fiscal year 1991. This program, as I have described, will result in an all Trident II/D-5 force by the end of the century.

Now because of our decommissioning of *Poseidon* submarines, our launch tube inventory will decrease from a potential maximum of about 832 tubes in the year 1992 to 480 tubes in the year 2000.

Despite that decline in launch tubes, the capability of the submarine force will continue to increase throughout this and the next decade. This is due almost entirely to the introduction of the more capable D–5 missile. It is also due somewhat to the ability of the *Trident* submarine to remain at sea for longer durations and a larger percentage of its time than the present *Poseidon* submarine.

The Navy has not yet determined or recommended an ultimate force size for the SLBM force. There are a number of factors that affect that decision. The overall mix between our ICBM's, cruise missiles, the submarine-launched ballistic missiles, and bombers is a large factor. Of course, U.S. strategy and objectives, the threat, the character of the enemy target system and arms control considerations are also relevant.

All of the foregoing are factors that are being constantly evaluated by our Secretary of Defense and by the Joint Chiefs of Staff.

In order to be a bit more specific, I can give you a feel for the capabilities of several purely illustrative SLBM forces. Because of the greater effectiveness and reliability of the missile, the greater number of tubes and the higher at-sea time, a *Trident* submarine/C–4 missile combination of about 17 ships will provide the same military capability as the entire force of 31 *Poseidon* submarines. Fewer *Trident* SSBN's, when equipped with the *Trident* II/D–5 missile, will provide a similar capability as to that which we have today.

Now the Navy studies have consistently shown that roughly two squadrons of about 10 SSBN's each would provide a formidable capability. Due to geographic factors, the location of the target base, the relationship between missile range, payload, and accuracy and the desire to maximize the total operation area available to the submarines, it is almost self-evident that it is appropriate to operate *Trident* submarines from both the east and the west coasts.

Given that we will have and deploy the *Trident* II/D–5 missile with its greater capability, the Navy feels the continuation of one submarine per year is a satisfactory building rate.

Unless there are overriding considerations of national importance with regard to force levels and capabilities, the prudent course of action is to plan to continue the one-per-year *Trident* construction rate.

NUCLEAR LAND ATTACK CRUISE MISSILE

Allow me to shift subjects and talk for a moment about the nuclear land attack cruise missile which the President's program also called for.

Because of the multi-mission aspects of our SSBN's as well as our surface forces, the Navy does not feel that it can afford to dedicate general purpose ships to the strategic role on a continuing basis. However, the general purpose submarines and surface ships that will carry the nuclear land attack Tomahawk cruise missile will represent a formidable capability to supplement the theater nuclear support role. Most importantly, it will provide additional survivable nuclear forces for the Strategic Reserve Force. The latter role could be pivotal in the postwar balance and struggle for recovery.

Regardless of how used these weapons are, they must be considered in the Soviet's calculations of the U.S. capability.

As you mentioned, sir, the President's program places improvements on command and control for all strategic forces and places them at a high priority. The SLBM force must in fact be responsive to the needs of the national command authority. Therefore, the communications systems must facilitate and not degrade the high survivability and endurance enjoyed by the SLBM force. The President's program is a long step in getting our C^3 house in order.

Vice Admiral Nagler, the Director of the Navy's Command and Control function for the Office of the Chief of Naval Operations, will appear before this committee next week and will discuss these matters in greater detail.

In closing, allow me to express that the Navy believes that President Reagan's program is a wise balance between the needs of strategic forces and the needs of our general purpose forces.

Moreover, the Navy is particularly confident that the D-5 missile can be produced on time and will achieve the desired performance. When matched with the capable *Trident* submarine and improvements in command and control, the sea-based leg will contribute significantly to deterrence and hopefully will provide the leverage and the incentives for arms reduction.

[The prepared statement of Rear Adm. William A. Williams III follows:]

PREPARED STATEMENT OF REAR ADM. WILLIAM A. WILLIAMS III, DIRECTOR, STRATEGIC AND THEATER NUCLEAR WARFARE DIVISION, OFFICE OF THE CHIEF OF NAVAL OPERATIONS

Mr. Chairman, gentlemen, I am Rear Adm. Bill Williams, the Director of the Strategic and Theater Nuclear Warfare Division in the Office of the Chief of Naval Operations. This division is the Navy focal point for translating national nuclear policy into Navy requirements and for assessing how well our current and future systems, plans, and policies support national objectives. I appreciate the opportunity to appear before this important subcommittee.

Before proceeding, allow me to introduce key people in the Navy's nuclear missile program: Rear Adm. Glenwood Clark, USN, the Director of the Strategic Systems Project Office; Rear Adm. Frank Kelso, USN, the Director of the Strategic Submarine Division and Trident Program Coordinator and Rear Adm. Walter Locke, the Director of Cruise Missile Projects. I will call on them to respond to technical questions the committee might have.

I will lead off the discussion today with an overview of the Navy's strategic program as directed by President Reagan's announcement of October 2. I will address force capability and effectiveness, timing of new construction and retirements, program costs, and how the Trident II, the D-5 missile, will enhance the Nation's overall deterrent posture.

When my predecessor, Rear Adm. Powell Carter, testified before this subcommittee last February, Navy did not have an approved D-5 program. Rather, we had an advanced development program for an improved sea launched ballistic missile which would have led to a selection of the follow-on missile in fiscal year 1983. The funding profile supported a 1990 IOC. Since then, SECDEF has directed Navy to plan to proceed with development and initial deployment of the D-5 in 1989. It may be possible to advance the IOC by a modest amount; Admiral Clark's office is examining this alternative in greater detail. Since February, *Ohio*, the first Trident submarine, has enjoyed highly successful sea trials: the ship has exceeded performance goals in many critical areas. Additionally, a total of seven Poseidon submarines have been backfitted with the longer range C-4 missile, which has performed significantly better than its own design goals. The last five Poseidon submarines to be backfitted with the C-4 missile are being converted now incident to regular overhaul. This program will be completed in September of next year.

Later in this decade, the D-5 missile will add an entirely new dimension to our sea based capability. It will also enhance considerably some of our current capabilities. For the first time, the United States will have a sea-based missile system that is effective across the entire target spectrum—from hard silos and command and control facilities to the softer military and war supporting industrial targets. This characteristic is essential to a countervailing strategy. Of tremendous importance is the fact that the missile will be in a truly nontargetable and fully survivable basing mode. Thus, there are no pressures to "use or lose" the system, a powerfully stabilizing influence in a crisis situation. Furthermore, SLBM survivability is not coupled to Soviet proliferation or qualitative improvements in their strategic offensive systems. Thus, Trident force size can be largely determined by the required military capability. In other words, there is no need to proliferate systems to compensate for the lack of survivability. Another important attribute of the D–5 is that it will provide an increment of invulnerable, hard target kill capability with each submarine that goes to sea. Thus an inducement to the Soviets to move their strategic forces into a more survivable basing mode is applied in a measured, deliberate manner. The U.S. move to incorporate greater capability in nontargetable systems will provide leverage and incentives for the Soviets to de-emphasize their large throwweight, but potentially vulnerable, ICBM force. This could then set the stage for meaningful arms reductions without impacting adversely on either side's legitimate military needs.

I have stressed survivability of the SLBM system. In order to reaffirm that idea, let me comment that a broad range of recent analyses—by the CIA, the DIA, the Navy and Rand (for the Air Force) are unanimous in their view that the SLBM force is essentially invulnerable today and will remain so for the forseeable future. A recent study by the Congressional Office of Technology Assessment reached a similar conclusion.

We see no complications resulting from President Reagan's D–5 decision. The D–5, for a given total expenditure, will provide much greater capability than the C–4 missile. It will have about 75 percent more payload than the current C–4; a major improvement in accuracy over the C–4; a full load range comparable to that of the C–4; an ability, like the C–4, for greater ranges with fewer RVs; and a flexible front end that will allow choices concerning the warheads, depending upon the targeting assignment. We are also looking at other payload options.

The Navy has developed an acquisition plan designed to optimize the performance of the missile. We will continue to use the same management philosophy and plan that proved a success in previous SLBM programs. In essence, the strategic systems project office, under Admiral Clark, will function as a prime contractor and integrator of the numerous sub-contractors responsible for the various aspects of the weapons system. Specifically, we will utilize, to the extent possible, those sub-contractors who performed so successfully in previous missile development and production. This, coupled with avoiding revolutionary, high risk development efforts, will shorten the development period, contain total costs, and minimize risks.

Concept development of the Trident II missile system was conducted from fiscal year 1978 to fiscal year 1980. This effort explored the full spectrum of accuracy improvements, range, footprint and payload that technologically could be available. From these investigations, the Trident II program was developed. Advanced development commenced in fiscal year 1981. The specific objectives of the advanced development program include: Developing selected components and subsystems to reduce acquisition lead time and to define optimum missile configurations; developing the prototype of a new guidance system; and pursuing major missile and propulsion improvements through ground testing.

Moreover, since fiscal year 1975, the Navy has been conducting the improved accuracy program, which directly supports the development of the Trident II missile. The program's purpose is to develop the ability to predict with confidence the costs and schedules associated with achieving accuracy improvements in future missiles. Although the improved accuracy program will not be completed until the end of fiscal year 1982, developments to date provide high confidence that the required accuracies will be achieved.

Thus, the three major elements of the acquisition program—continuity in project manager, a sound development program which commenced 4 years ago, and the improved accuracy program—give assurance that the Trident II program will optimize missile performance.

We plan to retire the 31 Poseidon hulls after each reaches its nominal life of 30 years. The first Poseidon hull will retire in fiscal year 1993; the last, in fiscal year 1999.

We expect the Trident submarine building rate to proceed at a rate of one per year. The initial D-5 missiles will be installed in early Trident submarines which will undergo a conversion from C-4 to D-5 with the first deploying in 1989. Some of the later conversions will be done concurrently with regularly scheduled overhauls. Under the current plan the first new construction Trident submarine that will be initially configured in construction to carry the D-5 probably will be the 13th ship, scheduled for delivery in fiscal year 1991. This program will result in an all Trident D-5 force by the end of the century.

Because of decommissioning of Poseidon, our launch tube inventory will decrease from a potential maximum of 832 in fiscal year 1992 to 480 by the year 2000. Despite the decline in launch tubes, the capability of the SLBM force will continue to increase throughout this and the next decade. This is due entirely to the introduction of the more capable D-5 missile and the Trident submarine which can spend a larger portion of time at sea compared to Poseidon SSBNs.

The ultimate size of the SLBM force depends on a wide range of factors. The overall mix between land based missiles, bombers, cruise missiles and SLBMs, is a large factor. Of course, U.S. strategy and objectives, the threat, the character of the enemy target system, and arms control considerations are also strong considerations, all of the foregoing are factors that are being constantly evaluated by the Secretary of Defense and the Joint Chiefs of Staff.

In order to be a bit more specific, I can give you a feel for the capabilities of several purely illustrative SLBM forces. Because of the greater effectiveness and reliability of the missile, the greater number of tubes, and the higher at seatime, a Trident submarine/C-4 missile combination of about 18 ships will provide the same military capability as the entire force of 31 Poseidon submarines. Fewer Trident SSBNs, equipped with the D-5 missile, will provide a similar capability.

Navy studies have consistently shown that two squadrons of about 10 SSBNs each would provide a formidable capability. Due to geographic factors, the location of the target base, the relationships between missile range, payload and accuracy and the desire to maximize the total operational area available for SSBN use, it is almost self-evident that it is appropriate to operate Trident submarines from both the east and west coasts.

Given that we will deploy a D-5 with its greater capability, the Navy feels that continuation of the one per year submarine building rate is satisfactory. With the long lead times involved, we would not be able to realize the results of an increased building rate until 1991 or 1992. Unless there are over-riding considerations of national importance with regard to force levels and capabilities, the prudent course of action is to plan to continue the one per year Trident construction rate.

The President's program also calls for deployment of nuclear land attack cruise missiles on attack submarines, beginning in 1984. Because of the multimission aspects of our SSBNs as well as our surface forces, we cannot afford to dedicate these ships to the strategic role on a continuing basis. However, the general purpose submarines and surface ships will represent a formidable capability to supplement the theater nuclear support role, to participate in a strategic role if directed and, very importantly, to provide additional survivable nuclear forces for the strategic reserve force. The latter role could be pivotal in the post war balance and struggle for recovery. Regardless of how used, these weapons must be considered in the Soviet calculus of U.S. capability.

The President's program places improvement of command, control and communications for all strategic forces at a high priority. The SLBM force must be responsive to the needs of the national command authorities. Therefore, the communication systems must facilitate, not degrade, the high survivability and endurance enjoyed by the SLBM force. The President's program is a long needed step in getting our C^3 house in order. Vice Admiral Nagler, the Director, Command and Control for the Navy will appear before this committee to discuss C^3 in greater detail.

As a prelude to addressing Trident program costs, it is necessary to enunciate several assumptions. First, the expenditures in fiscal year 1981 and prior years are considered to be sunk costs. Second, the force is an illustrative one consisting of 20 *Ohio* class SSBNs, each with D-5 missiles, IOC 1989, and third, the force will be divided between the Atlantic and Pacific.

The total future program acquisition cost will be addressed in my testimony.

In closing, allow me to express that the Navy believes that President Reagan's program is a balance between the needs of strategic forces and the needs of general purpose forces. Moreover, the Navy is confident that the D-5 missile can be produced on time and will achieve the desired performance. When matched with the capable Trident SSBN and improvements in C^3, the sea based leg will contribute significantly to deterrence and, hopefully, will provide the leverage and incentives for arms reductions.

Admiral Williams. Mr. Chairman, that concludes my overview. My colleagues and I are at your disposal to discuss any concerns of your subcommittee.

Senator Warner. Thank you very much.

HARD TARGET KILL CAPABILITY AT SEA

Admiral Williams, in your opening statement you make a strong case for the advantages of having a hard target kill capability at sea. From the various standpoints of strategic stability, system survivability and arms control and immunity to an expanded threat you seem to think that providing the submarine force for such a capability is a proper idea.

Do you think it is important to maintain a land-based ICBM force as a hedge, or I should say a complement, against an ASW breakthrough as a means of complicating the Soviet's targeting problems and drawing away warheads which could be used for sea barrage attacks against the SSBN's, in other words, a continuation of the time-honored Triad concept in our nuclear planning?

Admiral Williams. Yes, sir. There are many reasons to endorse the flexibility, the redundancy and the hedging that are provided by complementary systems. When you speak to the Triad, you are speaking to that sort of notion. The very notion of the hard target kill capability going to sea is a reinforcement of the Triad by distributing this capability through various elements of the Triad.

Senator Warner. But the success, and I may say the unusual success that we are enjoying currently and projected with the sea leg should in no way detract from the continued emphasis we must place on the land leg.

Admiral Williams. I agree with you.

TRIDENT II

Senator Warner. Turning to the D–5, and I prefer Trident II, and I wish we would get this terminology straight some day.

Admiral Williams. I apologize, sir. I used both terms because I didn't know which was your preference.

Senator Warner. Well, it is one of those things we may be able to turn around.

Before the announcement of the President's MX decision, the rationale for the Trident II seemed to stress the fact that this new missile could be more cost effective. The rate of procurement of the *Ohio*-class SSBN's had actually been reduced below what had been originally hoped for in part as a result of the decision to proceed with the Trident II. Now it looks at if the Trident II will have to take an even greater burden off the ICBM force.

To what degree is the current Trident II program designed to reduce costs associated with missiles and submarines and to what degree is it designed to take on more of the missions formerly held out for the land-based system?

Let me rephrase that question. Was the D-5 designed in any way to reduce the mission of the land-based system? I don't think so. It was designed to complement the land-based system.

Admiral WILLIAMS. Exactly, sir. We just discussed that point.

Senator WARNER. Yes, I think we did.

How many *Ohio* submarines do you anticipate that we will add to the inventory? That would be a closed session question.

Admiral WILLIAMS. Well, I skirted on that subject to some degree in the statement. There are many elements that need to be considered to answer that question, but a very illustrative force might be about 20. This would be formidable, capable and very reinforcive for the entire strategic deterrence of the United States.

Senator WARNER. Is the fiscal year 1982 program adequate, in your judgment, fundingwise to provide for the program that you have outlined this morning?

Admiral WILLIAMS. Sir, may I ask Admiral Clark to talk to that?

Senator WARNER. Yes.

Admiral CLARK. The fiscal 1982 budget as it was submitted by the Department of Defense is adequate to support the program. However, I would like to point out that we have still pending a fiscal 1981 reprograming action of about $33 million that was submitted to Congress in March and it has yet to be approved by all four committees.

Senator WARNER. Is that in the Trident II missile?

Admiral CLARK. Yes, sir.

Senator WARNER. That was something that we did discuss last night indirectly and it seemed to me and others that a very positive action of the conference with respect to the 1982 program should remove the objection to that 1981 reprograming action. I think it was contingent on what we did last night with respect to 1982.

Admiral CLARK. That was my understanding. I would also like to point out that we are now in fiscal year 1982 and we have been held, in fact limited to an expenditure rate that is equivalent to the House version of the authorization bill.

So, therefore, we are for two reasons expending funds at a lower rate than was assumed to be required to meet the program objectives that have been outlined.

Senator WARNER. For the record, that objection was not lodged on the Senate side. It was on the House side for 1981. [Laughter.]

Admiral CLARK. So we are really having some impact in our ability to get on with this program. As a consequence we have slipped some events.

Senator WARNER. The House Members last night were very supportive of the D-5 program and are well aware of the Senate's desire for it to move right along.

Admiral Williams, in your opening statement you mentioned that we may achieve a potential maximum number of missile tubes in the fleet by 1992 of 832. What assumptions go into arriving at that number?

Admiral WILLIAMS. Sir, I can show you that clearly in closed session. I would also like to comment that 832 is a potential maximum. It need not occur, and in fact might not, were we to continue to observe the interim agreement and have to honor certain limitations upon submarine hulls, submarine launchers and total MIRV launchers.

Now, of course, another negotiated arms reduction agreement would modify that number also.

Senator WARNER. Should we make a determination to return to a one and a half submarine Trident program per year what would be the maximum number of tubes and what would the corresponding minimum number be after all the Poseidon boats are withdrawn from the service?

Admiral WILLIAMS. I think the building rate would not affect the ultimate sum. It would only affect the rate at which they were introduced. It would cause the submarine force to mount an improved capability more rapidly but it would not achieve a higher improved capability.

Senator WARNER. Admiral Kelso, what are the factors driving the current plan to decommission the Poseidon submarine? Is it cost, is it aging, is it arms control?

Admiral KELSO. Senator, to discuss that fully I would have to go to a closed session, but it depends on arms limitations. If we continue to follow the interim agreement as we have in the past then that obviously would fix us at a certain tube limit under the original agreements.

The 30-year life that Admiral Williams spoke of in his statement is primarily predicated upon the fact that those ships were designed to operate for 20 years and we have currently extended them to 30 years. That from an engineering standpoint is a technical decision which we have made that we feel that it is safe to continue to operate them to 30 years. You would have to make another technical judgment if you were going to operate them longer. Is it safe to do so?

The other question, as I see it, is those ships are of a technology that is about the fifties or sixties at best. So as time changes the world changes around you. In a submarine, probably more than any other ship, technology in the way of acoustic quietness drive you to go to new technologies because your potential adversary goes to new technologies.

So in my mind whether you want to operate them further than that based on technology or not is another question, sir. But those are the major factors.

Senator WARNER. I address this to the panel and anyone may answer it.

I recognize that we are going to hear from Vice Admiral Nagler in a few days about the detailed aspects to the C^3 modernization effort.

ELF PROGRAM

First, I would like to ask a few questions of you concerning the need for command, control, and communications for the submarine force, specifically the program ELF. As you know, we are going to go ahead with that program, but I would like to have this record reflect some of the justification and the need for it.

Admiral KELSO. I will address your question from an operator's standpoint. I think that is what you are asking me to do.

Senator WARNER. Yes.

Admiral KELSO. We believe that we should go on with ELF, that it is a program that is needed to provide the capability for communications with submarines at greater depths than we normally would operate with the current systems and that that system is a hedge or an insurance policy, you might say, against any future technologies that might be coming on the horizon in the way of a submarine detectability.

It is not that we are saying that there is a invulnerability issue today, but in order to maintain the invulnerability the way we believe it is today you have got to continue to upgrade your own systems to do that and ELF is part of that issue so as to provide you the ability to operate the submarine in a greater depth envelope than you can today due to the communications capability that exists.

Senator WARNER. According to my recollection, I think each of you were commanders at the time they first started this program in the Congress. Would that be about right? [Laughter.]

Admiral KELSO. I am not sure we weren't younger than that then, sir. [Laughter.]

Senator WARNER. I think it was 1969 when I first testified on behalf of that one.

One of the initiatives taken by this subcommittee and last night approved by the conference was the funding to accelerate the research and development on an interim EHF package for the fleet satellites and a new multimission EHF satellite.

How important do you believe the introduction of extremely high frequency communication capabilities are to your submarine fleet?

Admiral WILLIAMS. Mr. Chairman, if I may, I would prefer to have that question deferred to Vice Admiral Nagler when he speaks to you next week.

Senator WARNER. All right.

TACAMO SYSTEM

Let's close out on the TACAMO system. As part of the President's C^3 modernization program the decision to replace the existing EC-130 TACAMO aircraft for the new plane designated ECX has been made.

I wonder if you could comment on the kinds of operational constraints the submarine fleet must operate under as result of the limitations of the present TACAMO system and what priority do you attach to an easing of those constraints?

Admiral WILLIAMS. Sir, again, that is a subject that is well addressed by Vice Admiral Nagler. However, the TACAMO system is constraining the submarine force in the sense that the TACAMO system is overaged and overburdened and a replacement is needed.

Senator WARNER. All right.

The delays experienced in the construction of the first *Ohio*-class undoubtedly taught us some lessons. Are you confident that the current production schedule of that class of submarine can be met now and that that learning curve is a good deal behind us?

Admiral KELSO. Senator, I believe based on everything I know today that the shipbuilder can meet the schedules which he has projected. The Secretary of the Navy, as you know, last week indicated that another SSN contract would go to Electric Boat; the ninth Trident submarine contract is currently being negotiated between the Navy and Electric Boat.

I think those decisions were made based on a judgment at the highest levels in the Navy that they felt that the contractor would meet those schedules, sir, and that most of the problems that had existed in the past from the standpoint of the things we have heard in the way of welding and quality control have been adjusted and have been corrected.

IMPACT OF SALT I AND II

Senator **WARNER**. We talked earlier about the impact of SALT I and the proposed terms of SALT II on the submarine force and the number of SLBM launcher tubes was limited by provisions in SALT I and the proposed SALT II.

In the protocol to SALT I, which I have before me now, the United States was limited to no more than 656 SLBM launchers on 44 submarines. SALT II had a limit of 1,200 MIRV missiles, which if SALT II had gone into effect and if program schedules in effect when SALT was signed had been maintained, it would force the United States to choose in 1985, that is, when the seventh and eighth *Ohio*-class subs were expected, between retirement of the Trident submarines and the retirement of Minuteman III missiles.

Will the President's plan to retire Titan II missiles next year result in those missiles being retired soon enough to permit the United States to continue to comply with SALT I if we want without dismantling a Polaris attack submarine?

Admiral **WILLIAMS**. Sir, that whole issue is a very complicated one and the provisions of SALT I and SALT II constrain not only total numbers of launchers but also MIRV launchers.

To answer your question, we would have to consider and know what future decisions will be with respect to the introduction of several MIRV systems, not the least of which are MX and Trident II.

We cannot talk to ultimate decisions without understanding the entire package, and I don't think the Navy is equipped to do that at this time.

Senator **WARNER**. I think you are looking more at SALT II than SALT I.

Admiral **WILLIAMS**. Yes, sir.

Senator **WARNER**. Rather than take up more time on this issue, reexamine it and for the purpose of the record let's clarify the program as it relates to SALT I.

[The information follows:]

SALT AGREEMENT

Assuming continued observance of SALT I Interim Agreement limits, we could compensate for additional Trident launchers by dismantling either Titan II or older SLBM launchers. The President's decision to base some MX in Titan silos would provide a theoretical option to dismantle excess Titan silos and deploy a corresponding number of additional SLBM launchers pursuant to the provisions of the Interim Agreement. This assumes that Titan dismantlement could be accomplished within six months after the SSBNs involved commenced sea trials. It would not, however, appear possible to meet such a timetable in the near future. Again assuming that Interim Agreement limits apply, an alternative would be to dismantle launchers on Polaris submarines which are no longer assigned a strategic role. Under such a program, Trident-for-Polaris compensation could be made until about 1986. Thereafter, we would have to reexamine our options.

Senator WARNER. At this time we will now adjourn the open session and I ask the Chief Counsel to clear the room such that we can proceed to a closed session.

[Whereupon, at 9:24 a.m., the open session concluded.]

EXECUTIVE SESSION

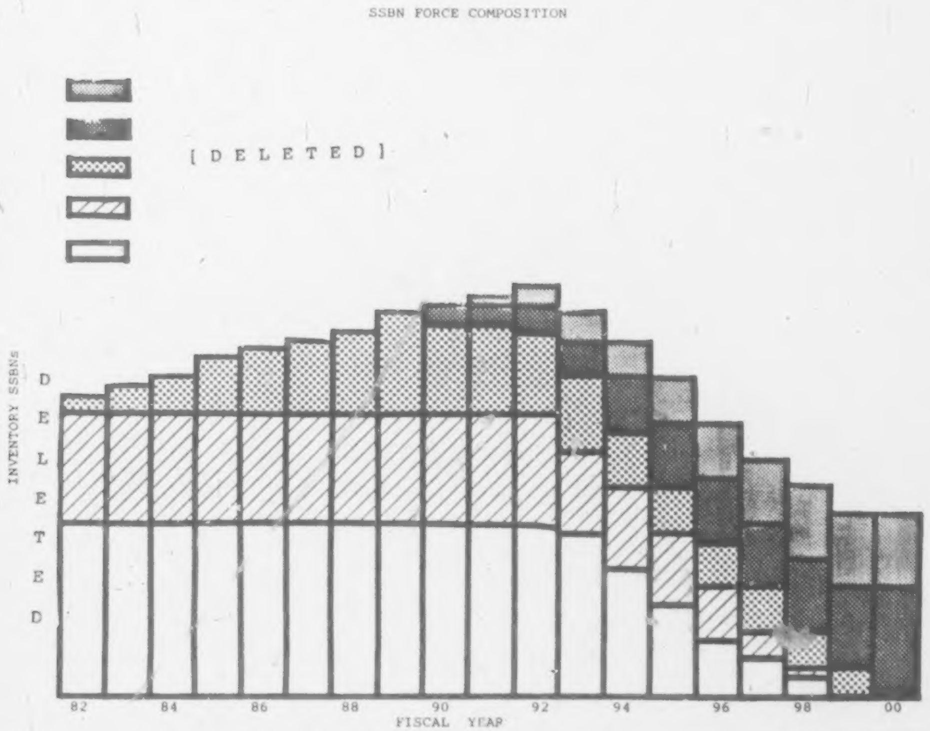
The subcommittee reconvened in closed session at 9:32 a.m., in room 212, Russell Senate Office Building, Senator John W. Warner (chairman) presiding.

Senator WARNER. Gentlemen, we are now ready to proceed with the presentation I understand that you wish to make.

Admiral WILLIAMS. Mr. Chairman, you expressed some interest in force levels and SALT and capability and I thought I would show you several classified slides that will give you an overview.

Senator WARNER. For those of us who might not appreciate it, we had a member of TASS in here this morning, and I just wanted to make clear to them that we are doing the best we can to build a submarine force.

All right, Admiral. It is a pleasure to be with you gentlemen.



Admiral WILLIAMS. Well, the program that I was talking about will produce a number of hulls over the next 19 years starting in 1981 and running out to the end of the century. Those bars are aggregates of the hulls in the submarine force.

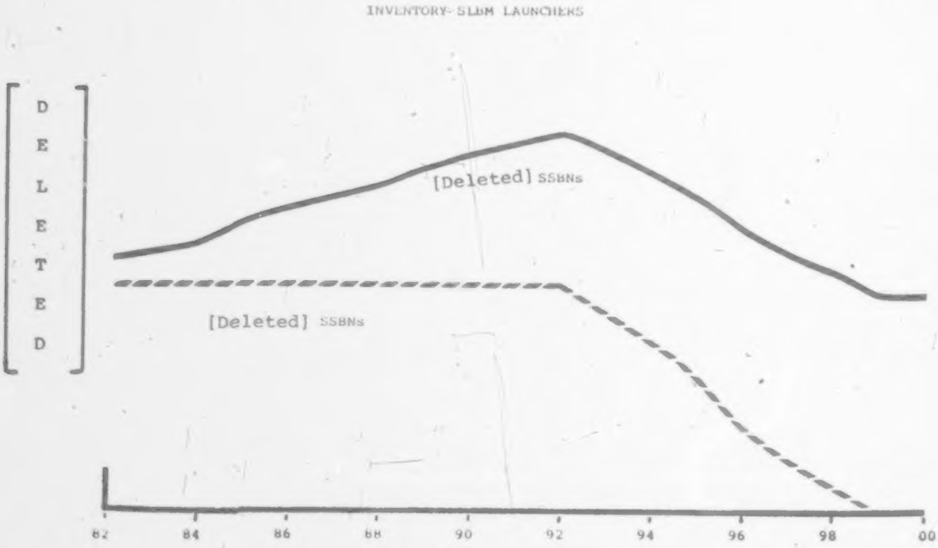
The bottom group are the Poseidon submarines with Poseidon missiles. There are [deleted] of them and they will decommission by the end of the century after a nominal life of 30 years. We will have [deleted] Poseidon submarines [deleted] and they also will decommission by the end of the century.

We are building Trident submarines with Trident I missiles. They will disappear from the scene as Trident I's but will reappear in this dark group here as Trident II submarines as conversion or retrofit progresses.

Then we have a group of submarines that will come to life and be born with only Trident II missiles and never see Trident I missiles, and that is that group.

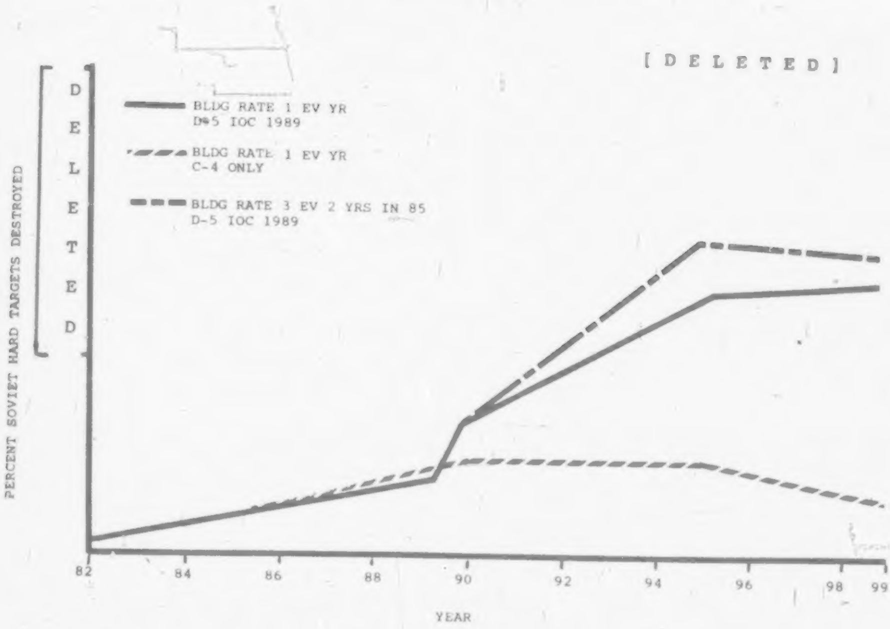
What we have is a number of submarine hulls and I think it peaks out [deleted] here and this illustrative case shows [deleted] here.

If we adhere to the provisions of the SALT I interim agreement as understood today, there will have to be some cutting off about like that. I cannot be much more specific because it is tied to many things about which we can only hypothesize.



What we clearly have is a rise in submarine hulls followed by a dip. Let me translate the submarine hulls into submarine launch tubes. We see that we have a rise, but the dip is not quite so severe because these hulls that are in existence out here have a greater number of tubes per hull than we do today. The important thing to be aware of is that despite this dip, we have a continually increasing capability as shown in this viewgraph.

FORCE CAPABILITY



Across the bottom, years, again to the end of the century, and, vertically, is a representation of capability. It assumes that our submarine strategic system applies some fixed amount of effort against soft targets and then applies the balance of its capability against hard targets and we plot the results here.

At the present time the capability against hard targets [deleted]. It will accrue slightly as the Trident I missile becomes increasingly prevalent in the force, but if we were to stay with the Trident I program only we would follow this lower curve [deleted].

As a result of the President's decision, we will see, as shown on the solid curve, a rise in capability [deleted] on out to the end of the century.

My point is that the number of submarines and the number of tubes is not necessarily the most relevant measure of capability. That missile that the President has decided upon makes a significant difference.

Now let me add one more point. You asked about the consequences of a 1.5 per year building rate versus the 1 per year building rate. This upper curve gives you a feel for it.

It gives an increased capability at an early time, but when you get out here, when you have a notional 20-ship force, the capability by definition is essentially the same because you have 20 ships with the same missile in them. You have just acquired it earlier.

The Navy is making no strong overtures toward departing from the President's decision and adopting any accelerated rate.

Does that clarify some of your——

Senator **Warner**. That clarifies some.

I am going to ask the Majority and Minority Counsel to work right along with me on a series of questions.

Go right ahead.

IOC FOR THE D–5

Mr. **Lehman**. My question concerns the planned IOC for the D–5. As you know, this committee has over the years shown a regular support for that particular model of the Trident II missile. Last year we received Dr. Perry's report and we have received testimony over the last years that the planned IOC, if a decision was made to go ahead, would be 1989. You testified earlier that the funding level was more consistent with a 1990 IOC.

So I would like you to address two questions.

What action by either the Congress or the administration that resulted in a funding level that supported a 1990 IOC as opposed to a 1989 IOC that we had assumed would be part of the program?

Admiral **Williams**. Go ahead, Frank.

Admiral **Kelso**. I will take the question. In the funding that came over in the 1982 budget and the 1981 after Mr. Brown said in March of 1980 that we would go with the advanced development program to keep several options of missiles open, subsequent to that time in the President's budget as it came to the Hill there was sufficient money in the program to make a 1989 IOC by 1981, 1982 and 1983. We said we would make a decision in 1983. There was insufficient money in 1984 and out to make an 1989 IOC. But now with President Reagan's decision to go with a 1989 IOC, that assumes that the funding is going to be put in in the out years to bring it up. But the funding has always been in through 1983 to be able to make a 1989 IOC.

Mr. **Lehman**. So we were proceeding to fund a program each year to protect the option for a 1989 IOC——

Admiral **Kelso**. That is correct.

Mr. **Lehman** [continuing]. But in fact the out-year funding did not reflect a commitment.

Admiral **Kelso**. It did not reflect a commitment.

Mr. **Lehman**. So what is important here, is that you got the commitment?

Admiral **Kelso**. That is correct, sir.

Mr. **Lehman**. But from a planning point of view and from the Congress' point of view on a year-by-year basis we are still assuming a 1989 IOC?

Admiral **Kelso**. And the administration was protecting that option if they wanted to do that, yes, sir.

Mr. **Lehman**. The second question——

Admiral **Clark**. Excuse me. Can I just get back to the point I made in open session though. I want to express a concern about the lack of funding to do that program because that program that we outlined to you in the spring was predicated on the availability of approximately $97 million in 1981. Because of the reprograming problem, we were limited to $65 million, and because we didn't have the full budget request at the beginning of this fiscal year we are also seeing an impact. We are not able to do the things that we need to do to get on to meet the program objectives as it has been outlined to you.

So we are somewhat in jeopardy, I would say, in meeting either the performance objectives or the schedule, and how much in jeopardy depends on how long we go before all this gets resolved and we have an increased obligational authority.

Mr. **Lehman**. Has your difficulty with getting reprograming action through the Congress, resulted in a slip in the IOC or can that be made up?

Admiral **Clark**. Well, it depends on when that finally gets released. When this finally gets settled down with regard to the reprograming and the fiscal year 1982 amount we will address the impact at that time. You could take the impact either in compromising objectives or compromising schedule. So I can't really answer that question until we see when the final resolution occurs.

Mr. **Gaffney**. But at this point it is already a fairly acute problem?

Admiral **Clark**. That is right. Some of our prime contractors are not able to let some of the subcontracts that we need in some of the technology areas that we are pursuing. It is having an impact on us.

Senator **Warner**. I think either Chairman Tower or myself, and I will be happy to do it since this falls in my area with his approval, really ought to go over and sit down with some of the House Members and see what we can do to expedite this. I will undertake to do that this coming week if you gentlemen will set up the procedures.

Mr. **Riedel**. I would just like to clarify. Are you now saying that you have a 1990 IOC for the D–5 production? Is that correct?

Admiral **Kelso**. He is not saying that.

Admiral **Clark**. I am sorry. Say that again.

Admiral **Kelso**. He is not saying that. What he said is that he can't assess the complete impact.

What he asked was are you now saying that you have a 1990 IOC.

Admiral **Clark**. No, I am not saying that right now. What I am saying is that I can't really tell you what the impact will be until we know what the final resolution will be and have that obligational authority.

For example, if I had the increased obligational authority today we would make the 1989 IOC. If I don't get that until the end of December, it might be a different matter. We might have to adjust the program by some number of months.

Mr. **Riedel**. Is there any potential for accelerating that beyond 1989?

Admiral **Clark**. Yes, there is a potential for doing it with the availability of funds. We are now looking at that in some detail. I believe it is possible to accelerate it [deleted] assuming that the necessary funding would be made available. Of course, that would involve an increase in the fiscal year 1982 funding over and above what we requested. But I think it is feasible to do that or at least at this point it is still feasible [deleted]

Mr. **Lehman**. When the President's strategic modernization package came over it contained additional funding levels that would be reflected in the POM. Are you saying now that as a result of the President's decision you have formally been notified that the additional moneys would be placed in the POM to protect the 1989 IOC?

Admiral **Kelso**. Yes, that is what I am saying. I obviously can't speak to what the 1983 budget is going to be, but there is certainly a commitment here that the funding will be there.

D-5 MISSILE

Mr. **Lehman**. I would like to revisit the question of force structure and the D-5. Earlier in the year when it seemed very clear that there would be an early commitment to the D-5 missile and when the Navy was considering the option to cut back procurement of *Ohio* class submarines from one and a half a year to one a year the argument was being made both by technical people in the Navy and by technical people in the Defense Department that the reason for doing this was to come up with a more cost effective program, that you would be reducing the number of submarines but you would have the same capability at sea.

At the time those discussions were going on, of course, the Congress was not aware of the President's decision on the MX missile.

So the question is, now that the President has made a decision to halve the number of MX missiles that will be deployed, are you then going to add to the number of D-5 missiles deployed and the number of *Ohio* class submarines to be deployed to reflect that? Has OSD given you any such guidance? Have you looked at that? Or are we still assuming force structure levels of submarines and missiles that were based on that cost-effectiveness analysis?

Admiral **Williams**. You asked several questions. There has been no guidance rendered on that subject. Have we looked at it? I would be naive to tell you no. We have looked at many alternatives. Let me talk about force capability just a little bit. Here we have a portrayal of a force capability in two dimensions. [Viewgraph deleted.] Horizontally is a capability against soft targets and vertically against hard targets.

The dotted line at the bottom is today's force consisting of Poseidon and Poseidon with Trident I missiles. It says that if you take that entire force and apply it against the soft target base you can destroy [deleted]. You apply the entire force against the hard target base, you achieve [deleted].

Now, for discussion purposes let me hypothesize a purely illustrative, and I want to stress it is illustrative of 20 Trident submarines and outfit them with all Trident I missiles. [Deleted.]

Outfit that same 20 submarines with the D-5 missile, the Trident II, and this is the capability.

Senator **Warner**. Now I have got to determine what that factor is for capability. What are you factoring it against?

Admiral **Williams**. The hypothesis and the portrayal shows, and let's come back to today's force, that I take today's force and I apply its total capability against just the soft target base and I can destroy [deleted] it.

Senator **Warner**. [Deleted] target base of the Soviet Union.

Admiral **Williams**. Yes. Also, there have been some weapons in this analysis set aside for reserve force that were not utilized in making these calculations.

Now if we take that entire force, and set aside the same number of reserve force weapons that I mentioned, and apply the entire system against the hard targets in the Soviet Union, [deleted]. Now it is not necessary to go either/or. You can attack some of each if you desire and read your capability against each set of targets any place along that line.

Senator WARNER. So that is a mix. On the left-hand side your vertical is the hard target?

Admiral WILLIAMS. Silos, command and control, et cetera, [deleted].

Senator WARNER. And the bottom is soft target?

Admiral WILLIAMS. Soft target.

Senator WARNER. The line then shows a mix between the two, the distribution and the percentages.

Admiral WILLIAMS. Yes.

Senator WARNER. Let's see, the bottom line is today's Poseidon force, the second line is the Trident I——

Admiral WILLIAMS. And the top line Trident II.

Senator WARNER. There is a dramatic, absolutely dramatic, startling differential for the Trident II [deleted] correct?

Admiral WILLIAMS. That is right. And these two forces have exactly the same number of hulls and the same number of launch tubes. The difference resides with the missile.

Senator WARNER. Of course, don't we get an additional ASW advantage over here with the Trident II?

Admiral WILLIAMS Yes, sir, some.

Now, to come back to your question, if I were to answer the question of how large a Trident I force would equate to our present capability, we would only need I think [deleted] ships.

Please don't take these as absolute numbers. This is to try to get you a feel for the situation.

Senator WARNER. The top line you are pointing to now is hypothesized on a 20-sub force?

Admiral WILLIAMS. That is right. The lines that we show, show an illustrative 20-ship force for the Trident I and an illustrative 20-ship force with the Trident II. But if I wanted to know how many ships would equate to our present capability, the answer would be [deleted] instead of the 20, [deleted].

Now, you asked a little bit about MX. I think that I should really ask you what you think MX's capability is and then I can very quickly answer you how many Trident we need to do that.

Mr. LEHMAN. Could you leave your slide up. I think the question I am asking is basically this. The kinds of justifications that were being made for cutting back the *Ohio* program to one a year were complex but one aspect of that certainly was the argument that you could get that Trident I/C-4 capability against economic and soft military targets more cost effectively with fewer subs deployed with the D-5. So the emphasis was on that side of the curve. Now that we have had the MX decision, clearly there is going to be more interest on the other side of your curve. What I am asking is did someone say, well, the planned program was going to be 17 boats but now with MX it is going to be 20, or are you saying, well, it was going to be 20 in any case?

Admiral WILLIAMS. No, sir. May I please go back and say once again that I came over here with great reluctance showing 20. This is purely illustrative so I had some place to tell my analyst where to draw that curve because that curve is a function of the number of hulls. That 20 is an illustrative number and the Navy has not settled on that.

From my viewpoint I think it is a reasonably good number, but that is a personal opinion. There are many other considerations and many of them are budgetary.

When you say that people talk that it will be more cost effective to build one per year with the D-5 than one and a half per year without the D-5, I think it would be more accurate to say it was more affordable. If you were going to purchase the D-5 today, in order to be able to afford that you would have to slow down the acquisition of hulls. It turns out very fortunately that your capability accrues more rapidly. It is affordability rather than cost effectiveness, I think.

Senator WARNER. On that curve or any of those curves, particularly the top one, the Trident II, have you factored in the percentage of submarines in an operational status? In other words, as I understand it, you are hoping to achieve, Mr. Riedel informs me, a 70-percent operational status.

Admiral WILLIAMS. The number here is 67 percent.

Senator WARNER. Sixty-seven percent.

Admiral WILLIAMS. The day-to-day picture.

Senator WARNER. The day-to-day picture. Within that 67, is that also some at sea and some dockside?

Admiral WILLIAMS. Sixty-seven percent at sea.

Senator WARNER. At sea, but you do have a dockside capability?

Admiral WILLIAMS. Thirty-three percent. We are not taking credit for those submarines in calculating these curves. They are not shown here; however, they will have a capability if they survive. The reason they are not shown here is that it is national policy that we will not preemptively strike and we will acquiesce that the 33 percent of the force that is in port is subject to destruction. Shown on the curves is the capability of the remaining survivable, invulnerable force.

Senator WARNER. So that is 67 percent reflected at sea and not dockside. Just for my own knowledge, dockside is not the full 33 percent because you are bound to have one in overhaul. So that one is totally out. How does that fraction break down, that 33?

Admiral WILLIAMS. There are probably two ships that are in overhaul.

Senator WARNER. Two out of the 20 in overhaul. So that is 18. Of the 18 how many are at sea?

Admiral WILLIAMS. Seventy-five percent of them, so it is 13½ ships, or 13¼ ships, or something like that.

Senator WARNER. So there are probably around four dockside?

Admiral WILLIAMS. Yes, sir; exactly.

Senator WARNER. Four dockside which, if they survive the strike, could launch.

Admiral WILLIAMS. Another thing that I would like to say is that these curves all show SLBM capability only and were developed by the Navy. They are all done by one office and we can change any of the assumptions. One thing that we are doing is holding and applying the same assumptions to all of these curves. So, if we change this to the generated case the curves would move up a little but the relative position wouldn't change.

I would like to emphasize, again, it is an illustrative force and the relative position is always valid and immutable, but as the assumptions change, the absolute values will also change a little bit.

If you would like to look at the generated case when all ships are at sea, the capability just rises because those four ships, you talk about being dockside, are at sea and so everything rises up a little bit.

Mr. Gaffney. Admiral, for the record: Could you provide the proportion of the 33-percent that are at, say, Kings Bay and at Bangor out of that 20-ship force that would actually be able to attack some percentage of the targets?

I guess what I am asking is: Could you give us a comparable diagram that shows, given the various targets in the Soviet Union, how much the D–5 range buys you versus what the C–4 range buys you?

If you are at dockside with the C–4 you will be able to get some targets but not nearly the kind of coverage that you will have with the D–5 range? Is that correct?

Admiral Williams. No; that is not correct. The D–5 is a larger missile and has more capability. It has more strength. We are not investing in additional range but in additional payload with more warheads per missile. It has roughly the same nominal range. Now, there are some differences, but in general terms we are not advocating the D–5 because of its greater range. The C–4 has a very comfortable range.

Mr. Gaffney. But at dockside the C–4 is not able to cover the target base of the Soviet Union?

Admiral Williams. The entire target base, that is absolutely right.

Mr. Gaffney. And neither will the D–5?

Admiral Williams. That is also correct unless we choose to offload warheads and thereby gain additional range but with fewer warheads.

Mr. Gaffney. That would play into this analysis of what percentage you would be able to actually strike?

Admiral Williams. That is right.

Admiral Kelso. I think if you look at the FYDP you will see the same number of ships with one a year as it was with one every 2 years in 1985 and 1987 when it comes over. The way it has played out the building rate has been about one a year over the whole program although there have been a lot of accelerated building rates talked about. The 15 is the number of ships that you see in the out-year planning.

Mr. Lehman. The committee is well aware of the unfulfilled expectations of these 5-year Trident shipbuilding programs.

Could you provide us for the record the history of Navy testimony on the planned size of the *Ohio*-class submarine fleet?

Admiral Williams. On the what?

Mr. Lehman. The planned size, both official and unofficial testimony. The reason I ask that question is that over the years when you ask people how big is that fleet ever going to be, one number has informally emerged always and that is the number 20. It always is by 1999, or thereabouts. But, of course, as you know and I know the official guidance has been, well, we are going to build them and then some day we will know how many we have.

Admiral Kelso. I think the official record will show for the most part that it has never been addressed, that the Navy has never said what the ultimate number is because it obviously would depend upon a national decision as to what the force capability is going to be in relation to the other legs of the Triad. So, any number that has been given primarily has been the ones in the FYDP, but I will be glad to go back and review the record for you. I think the 20 speculative, it is really within the last year that anybody has even said that.

[The information follows:]

ULTIMATE TRIDENT FORCE SIZE

The Navy has not stated, in official testimony, the planned ultimate size of the *Ohio* class submarine fleet, but has continually stated that "the ultimate level is influenced by several interrelated factors. Primary among these will be the requirement to replace our currently operational SSBN forces as a result of aging and technological obsolescence; possible changes in the role SLBMs will play in the future United States mix of strategic forces; political considerations, such as the requirement for essential equivalence; and SALT considerations." The figure 20 Trident SSBNs has been used at times in the past as a convenient number for purposes of comparison, but not as an ultimate force strength. When interrogated as to how many Trident SSBNs should be built, Vice Admiral Williams gave the following testimony before the House Armed Services Seapower Subcommittee on 12 March 1981: "I think around 20 would be a reasonable guess for anybody today. I just wanted to make the point that no decision has been made as to the total number."

Senator **Warner**. Senator Nunn, thank you for joining us this morning.

Senator **Nunn**. These guys have really been working hard. They have been fighting for the strategic program and I will tell you that I am real proud of our staff on both sides.

Admiral, that is a very impressive chart, if I understand it. You are saying there is [deleted] hard and soft target kill capability when you go to the D-5. Is that what that chart tells us?

Admiral **Williams**. It certainly does, in spades.

Senator **Nunn**. I would like to have a declassified version to send as a Christmas card to the House Armed Services Committee. [Laughter.]

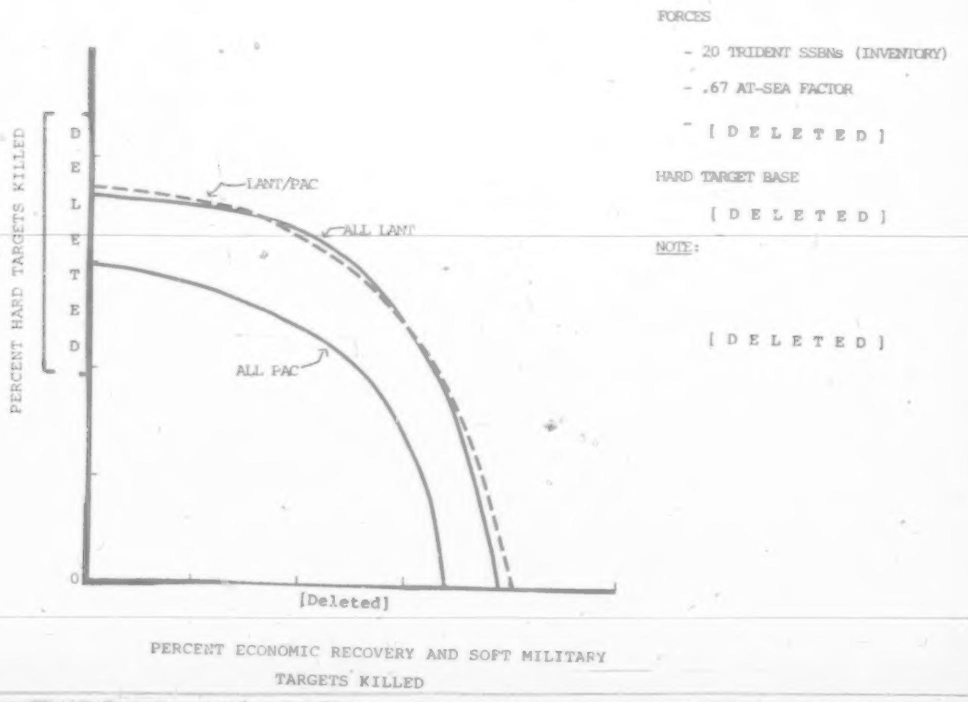
Senator Warner had an awful lot to do with saving this program.

Admiral **Williams**. It is a worthy one to save, though.

Senator **Nunn**. I agree. I agree completely.

What does that assume about where those boats are operating? Is that chart based on an operation in two oceans or one ocean or what percentage in each ocean?

Admiral **Williams**. It is two oceans. Let me talk to that subject, if you would like. This is exactly the same sort of chart.



Across the bottom is the capability against soft targets. And, vertically, the capability against hard targets of an illustrative 20-ship force with a lot of assumptions, some of which differ from the previous viewgraph.

Now, the assumptions aren't too important because they are equally applied to all three situations. The first situation is where those forces are operating in the Pacific only. The other two are where they are in the Atlantic only or the Atlantic and the Pacific.

Senator NUNN. It looks like the Atlantic only and the Atlantic and Pacific are about the same; is that correct?

Admiral WILLIAMS. Yes, except there are some considerations that maybe don't show up fully. One of them is our intuitive belief that we will compound the ASW difficulty with a two-ocean operation.

There are other considerations that don't show up there. A two-ocean operation probably would compound the difficulty for the Soviets to mount an ABM threat if you are attacking from two directions.

I would also suggest that we should be sensitive to the perceptions of our allies if we were not to have a two-ocean operation. They might be disillusioned if we were not a participant in the Atlantic.

Senator NUNN. Well, there is a psychological factor there as well.

Admiral WILLIAMS. We provide the strategic umbrella for a great many European NATO allies and it becomes increasingly difficult to strike all targets from the Pacific.

[Deleted.] I think the intuitive desirability of having some significant capability in the Atlantic is really apparent and it doesn't take my picture to persuade a person of that notion.

Senator NUNN. Is that Atlantic/Pacific combination of 10 boats in each? Is that what it would be?

Admiral WILLIAMS. Roughly. It could be 10 or it could be 12 or 8. If the force were smaller than the notional 20 it might be 7 and 8.

Senator NUNN. A couple of other questions. What is the planned role of the nuclear land attack cruise missiles to be based on attack submarines?

Admiral WILLIAMS. The Navy has been interested in the nuclear version of the Tomahawk missile, and you are referring to that as a land attack system, correct?

Senator NUNN. Yes.

Admiral WILLIAMS. We have never envisioned that as a weapon, it would be committed to the SIOP. We have envisioned that weapon to be a member of the theater commander's theater nuclear forces to be employed at his discretion with other theater weapons.

We also feel that we cannot commit the general purpose forces, which will carry those weapons, to a rigid SIOP role. So they tend to be a nuclear weapon carrier which are on call at the discretion of the theater commander who has operational control of them. He will make the tradeoff between whether they are best employed in launching the Tomahawk or doing a general purpose mission such as supporting the carrier battle group.

We also clearly recognize that their very presence out there and their survivable presence will provide to the Soviets a very difficult calculation process in assessing the United States' capabilities.

That sort of weapon will have great influence in the postwar struggle as a portion of the strategic reserve, that is those weapons that survive the massive nuclear exchanges.

Does that answer your question, Senator?

Senator NUNN. Yes; what does this additional mission do in terms of the attack submarine availability in the primary role?

Admiral WILLIAMS. It will to some degree compete obviously. It will be competing within the mind of the boss who owns them. It will not be two conflicting roles. It will be the theater commander who has that submarine.

Senator NUNN. What are the communications problems that arise in that new role? In other words, when you communicate with a submarine in that role, is that going to be the same form of communication or has it got to be augmented?

Admiral WILLIAMS. [Deleted.] The release process exists to release nuclear weapons and communicate that release from the President to the forces. There is no necessity for brand new communications links to do that. They are in place. So generally the answer to your question is there are no unique problems.

Senator NUNN. What is the status of the Navy planning for improving airborne communications to the SLBM's?

Admiral WILLIAMS. You are speaking of the TACAMO aircraft which provides our survivable link to the submarine force?

Senator NUNN. Right.

TACAMO—ECX

Admiral WILLIAMS. The TACAMO program today is based on old and burdened aircraft that need replacement and upgrading in things such as EMP hardening. It is the view that it is time now to invest in a more modern aircraft as a replacement rather than reinvesting in older aircraft.

Senator NUNN. What is the status of the planning for that new aircraft?

Admiral WILLIAMS. The ECX? Sir, Admiral Nagler will be here next week. He is the Navy's Command and Control Director.

Senator WARNER. Let me get a little something correct in the record here. I introduced the TACAMO system and I am not that old. [Laughter.]

We started that about 1959 to 1960—I guess it was in there—and when we beefed it up again, I think it was in 1963. We were using old airframes.

Admiral WILLIAMS. Yes, sir.

Senator WARNER. Well, we are just trying to interject a little Friday levity and don't worry about it. [Laughter.]

Senator NUNN. What is wrong with the current fleet besides being as old as Senator WARNER? [Laughter.]

Admiral WILLIAMS. Well, one thing is that we have an insufficient inventory at the present time to manage two oceans and we need a larger inventory of aircraft to accommodate the *Trident* submarine in the Pacific as well as supporting the *Poseidon* fleet in the Atlantic.

Senator NUNN. You are talking about a new airframe, then?

Admiral WILLIAMS. New airframes of one description or another; yes, sir.

Senator NUNN. In what timeframe would you be envisioning this airframe?

Admiral WILLIAMS. Can I provide that for the record, sir? You are asking me in an area of communications in which I am not fully conversant.

Senator NUNN. I will ask Admiral Nagler.

Admiral WILLIAMS. If you would ask Admiral Nagler.

Senator NUNN. I just wonder if any of this is in the 5-year defense plan?

Admiral WILLIAMS. I think the answer is yes, but I cannot tell you which year.

Senator NUNN. Could you supply that for the record?

Admiral WILLIAMS. Yes, sir.

[The information follows:]

TACAMO-ECX INTRODUCTION

Senator NUNN. In what time frame would you be envisioning this (ECX) airframe?

Admiral WILLIAMS. The fiscal year 1983 ECX program plans procurement and delivery as follows:

Procurement: Fiscal year:		Deliveries: Fiscal year:	
1984	[1] 1	1984	–
1985	3	1985	–
1986	3	1986	–
1987	3	1987	[Deleted]
1988	2	1988	
1989	2	1989	
1990	–	1990	
1991	–	1991	

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[1] R. & D/Prototype A/C.

The need for the TACAMO replacement aircraft on-line [deleted] dictates that an inproduction aircraft capable of performing the TACAMO mission be the subject of competitive bidding with the dissemination of the Request for Proposals (RFP) [deleted].

TACAMO ECX PLANNING

Senator NUNN. I just wonder if any of this (ECX) is in the 5-year defense plan?

Admiral WILLIAMS. Since the decision to commence ECX procurement is a recent one, the ECX plan is not included in the current Five Year Development Plan (FYDP–January 1981); however, the ECX will be in the next revision.

Senator NUNN. Former President Carter stated on one occasion that one *Poseidon* submarine carries enough warheads to destroy every large and medium-size city in the Soviet Union. Is this an accurate statement when you consider the range, geograph, and operational considerations?

Admiral WILLIAMS. I think that if you insisted that the submarine actually do it, then the statement was a little overinflated. I think if you talked conceptually and said where there are sufficient warheads [deleted] the answer is conceptually quite valid.

Senator WARNER. Now, wait a minute—let's get that correct. You have got how many missiles onboard?

Admiral WILLIAMS. Sixteen.

Senator WARNER. Warheads [deleted].

Admiral WILLIAMS. [Deleted.]

Senator WARNER. [Deleted] warheads?

Admiral WILLIAMS. Yes, sir.

Senator WARNER. How do you get that many cities?

Admiral WILLIAMS. Well, I was giving the President the benefit of the doubt.

Well, I understand the statement and I think that I acquiesce that it is overinflated and it is not technically correct. Someone could have said that he would have ordered the Poseidon system to upload [deleted] and there you would wind up [deleted]. I think it was a notional idea that there is a lot of destructive capability in the Poseidon submarine.

Senator **Warner**. That is quite accurate.

SLCM'S

Mr. **Gaffney**. May I ask a question that follows up on Senator Nunn's question. Admiral, you talked about the way the Navy has envisioned the use of SLCM's. Something about your own description and your careful wording in your statement leads me to believe that maybe the OSD view of the role of SLCM's may be slightly different.

Is there in fact guidance that suggests that they are designed to beef up our SIOP capabilities or is that not explicit?

Admiral **Williams**. No, I don't think so. I think my hesitancy in talking glibly on the subject hinges back to 1979 when the NATO allies made a commitment to emplace, on European soil, theater nuclear forces, specifically the GLCM and the Pershing II. At that time there was a desire to keep the NATO countries committed to that avenue with no alternatives. I think an obvious alternative is to say, well, let's use it on submarines which the Americans are building.

So by and large the Navy [deleted]. In fact, by and large in support of that notion 2 months ago I would have told you that the Navy had no firm commitment or any positive dedication to acquiring nuclear SLCM.

The President announced to the contrary, which was perfectly right because the Navy protected the option to deploy nuclear SLCM's if directed. But [deleted] the Navy was not talking about it specifically.

That is clearly a matter that can only be discussed in closed session. I can't discuss that in open session.

Admiral **Clark**. We are in closed session.

Mr. **Gaffney**. Understood, but I guess you have raised yet another issue. Are you saying that the administration now seems to be moving in the direction of offering this as an alternative to the land basing of particularly Pershing II's?

Admiral **Williams**. Oh, absolutely not. I do not perceive that at all.

Mr. **Gaffney**. But your answer is that it is of a theater nature at the OSD level as well as in the Navy and it is not envisioned as anything else perhaps with the exception of a reserve strategic force mission following a nuclear attack?

Admiral **Williams**. That is correct. We did not envision that it will be committed to the SIOP with the resulting loss of flexibility.

I think Senator Warner remembers the day when we had our aircraft carriers committed to the SIOP and it required that, once committed that you kept the carrier in at a certain rangemark so that the plane itself could meet a commitment. What that umbilical did to us was destroy flexibility. It was difficult to divorce ourselves from it then and today, we don't want to get ourselves back in that position. I think he knows better than I the reason for that.

Mr. GAFFNEY. Well, I think that is the concern that the committee would have with this proposal, too. For that reason it is important to get your answer as to your understanding of the kinds of impacts that might be experienced with regard to our SSN's primary mission as attack boats.

Senator WARNER. Senator Nunn, any further questions?

Senator NUNN. I have got two or three more, Mr. Chairman, but why don't you go ahead.

Senator WARNER. I have pretty well exhausted mine.

MX MISSILE

Senator NUNN. Admiral, has the Navy done any studies on a hypothetical basis about how many Trident boats would be needed if the MX missile were to be terminated?

Admiral WILLIAMS. Yes, sir.

Senator NUNN. What do those studies show?

Admiral WILLIAMS. They of course reside on some assumptions, and let me cite several assumptions.

Early on, the Trident system was designed [deleted]. The assumption was that the Air Force was to have [deleted] warheads survive.

Senator NUNN. That is MX?

Admiral WILLIAMS. That is MX, yes, sir. That meant that their prelaunch survivability that they adopted in their analysis [deleted].

The Navy can do the same job with [deleted] Trident submarines in the inventory as the [deleted] MX warheads would be able to do.

Now, if you believe that the MX survivability [deleted] will be 100 percent, the Navy can do the same job with [deleted] submarines. On the other hand, if you believe the MX system would have a survivability [deleted] the Navy would need only [deleted] submarines.

Senator NUNN. All right. Let's take the middle rung just for economic purposes, the [deleted] Trident subs versus the MX with [deleted] survivability~~; is~~ that right?

Admiral WILLIAMS. Yes, sir.

Senator NUNN. What do those [deleted] boats cost based on your best present knowledge? Just ballpark figures. I am not asking precisely.

Admiral WILLIAMS. Well, I think I would need to have a few more ground rules from you and I would provide that for the record. Do you want me to include the R. & D. cost of the Trident II missile, or should we assume development of the Trident II missile is going to be paid for and all we have to do is purchase it?

Senator NUNN. Well, for the record I would like it both ways, but just off the top of your head whichever is easier for you.

Admiral WILLIAMS. [Deleted.]

Senator NUNN. Do you have a study like that in writing giving the amounts?

Admiral WILLIAMS. We can provide that for the record, yes, sir, and we will do so. ~~It will~~ be very easy to do.

Senator NUNN. I would like to have a study.

[The information follows:]

TRIDENT II

If it is assumed that the R. & D. for the Trident II missile plus procurement of test missiles will be done for other reasons, the incremental costs in constant fiscal year 1982 dollars to procure [deleted] Trident II submarines and the ship fill of missiles plus military construction is estimated [deleted]. This will provide an inventory of [deleted], highly accurate [deleted]. RVs assuming two-thirds of the force is at sea and survives.

If the entire missile R. & D. plus test missile costs are included, total cost for [deleted] Trident II submarines would be [deleted].

A more reasonable approach would be to proportion the R. & D. and test missile procurement costs between the [deleted] Tridents to "replace the MX capability" and the Trident II force acquired for other reasons. Assuming a 20 ship Trident II force, the cost for [deleted] Tridents would be [deleted].

Senator Nunn. Do you have anything comparable to that as to what it would take if there were no B–1?

Admiral Williams. No, sir.

Senator Nunn. I think you had better start planning on that, too. I may be wrong, but I think that both programs are going to be under a great deal of fire.

I would particularly like to have that study seriously, Mr. Chairman, on the Trident and the MX. I think it becomes more relevant all the time at least for taking a look at it.

[The information follows:]

TRIDENT II

Before the announcement of the President's strategic program, the MX program consisted of 200 MX in 4,600 shelters, each to be hardened to withstand [deleted] overpressure. As originally conceived in the late 1970's, this force would provide [deleted] survivability—[deleted] warheads deployed—against the threat assumed for the late 1980's when the system was scheduled to reach full operational capacity. Since then the projected threat, assuming provisions of SALT II were in effect, has increased. Today, projections of the survivability of the base line MX deployment range [deleted].

In the Navy analysis, it was assumed that the MX would carry warheads [deleted]. The Trident II accuracy goal is also and it is expected that it will be able to carry [deleted] warheads. Thus a surviving Trident II warhead has a capability [deleted].

Navy studies have consistently shown that SSBNs at sea are invulnerable as far into the future as we can project. Our results have been substantiated by CIA, DIA, RAND and the Congressional Office of Technology Assessment. Thus we have assumed that those 66 percent of the total Trident force that are at sea on a day-to-day basis will survive. With [deleted] warning, we would be able to get those submarines undergoing refit between patrols underway and raise our overall survivability [deleted]. The remaining [deleted] would be in a shipyard undergoing overhaul and assumed destroyed in an attack.

Using a loading of [deleted] warheads [deleted] each submarine would carry [deleted] warheads of which two-thirds [deleted] would be at sea in a survivable mode on any given day. Thus it would take [deleted] Trident submarines in the inventory to provide a capability equal to [deleted] surviving MX warheads [deleted].

As noted in a previous question, procurement costs for a force of this size would vary [deleted] depending upon assumptions made about including R&D and test missile costs.

TRIDENT TRAINING FACILITIES

Senator Nunn. Just a couple of more questions that relate to the Navy's plans on the Atlantic boats.

Where will the initial Trident II training facilities as well as the missile-handling facilities be located?

Admiral **Williams**. Admiral Kelso.

Admiral **Kelso**. Well, based on the 1982 budget that is at Congress, the money is available to provide that training facility on the east coast, sir.

Senator **Nunn**. Based on the budget as you now know it?

Admiral **Kelso**. Based on the budget as I know now that is in the 1982 dollars; yes, sir.

Senator **Nunn**. You would be going on the east coast?

Admiral **Kelso**. I think it was stated $94 million Trident Milcon for that with no change.

Senator **Nunn**. Is there sufficient funding in the 1982 budget and the 5-year defense plan to insure that the support facilities are available to meet the requirements for a Trident II missile IOC of 1989?

Admiral **Kelso**. Yes, sir. Senator, let me answer that again. The budget you have on the Hill is the 1982 budget. No, sir, there is not enough money in the outyears in the 1982 budget to meet a 1989 IOC on the east coast. You probably could rearrange your program and do it in Bangor with that money, but it was about a 1990 IOC at Kings Bay in the outyears. The amount of money that is in the budget in 1982 protects a 1989 IOC and that is what you have to do in 1982.

Senator **Nunn**. So you are not losing it, but in the outyears you are going to have to have more money.

Admiral **Kelso**. It is the same as the missile, you had to have a commitment to the D-5 missile to go there. And once you had that commitment, if you continue your commitment to the east coast basing there would have to be additional dollars in the outyears.

Senator **Nunn**. What is the planned IOC for the east coast Trident facility planned at Kings Bay now?

Admiral **Kelso**. The capability to meet a 1989 IOC exists based on the 1982 budget. I obviously cannot speak to what the 1983-84 budget is going to be until the President's budget comes to Congress, sir, and I don't know that answer, to be honest with you, sir.

TRIDENT BOAT

Senator **Nunn**. Admiral Williams, one other question on the Trident boat, and you may have already gone into this in detail. When you talk about the survivability rate [deleted] on the MX and when you talked about [deleted] Trident boats being the equivalent, if we were to decide to go in that direction what would be reasonable, and I am not talking about crash programs, but reasonable capability of building those boats and getting them into the fleet? How many do you have planned now and at about what point without this, and if you were to put an increment on top of that of [deleted] additional boats what would that do to your present schedule? Maybe that is part of the study?

Admiral **Williams**. It is a little bit. Also, I have gone over a substantial portion of that. I think you were here when I showed how many Trident submarines equipped with the Trident II missile will equal our present capability. [Deleted.] If you added [deleted] to that you would be, you know, up close to that notional illustrative force I have shown. With the President's program, that force will mature in the year 1999, the end of this century.

Before you arrived, I showed that accelerating the building rate to 1½ per year does give you the capability a bit earlier but it doesn't give you greater capability ultimately.

Senator Nunn. I guess the question is you have got 10 boats planned now, right?

Admiral Williams. No, sir.

Senator Nunn. How many?

Admiral Williams. I will have to ask Admiral Kelso to tell you how many.

Admiral Kelso. Eight contracts have been let. There are nine authorized and the ninth contract is under negotiation at the current time.

Senator Nunn. That is all you have been authorized, but the Navy itself is planning 10 boats now?

Admiral Kelso. If you look at the outyear numbers in the FYDP it is 15 total.

Senator Nunn. How many?

Admiral Kelso. Fifteen is the total if you look at the FYDP. It is 15 ships.

Senator Nunn. That additional [deleted]. I am just trying to get in my mind what that would be added to if you were going to replace the MX. Would it be added to the 9 or would it be added to the 15 or would it be added [deleted].

Admiral Williams. I think it might be part [deleted].

Senator Nunn. A part [deleted].

Admiral Williams. The Navy's intuitive feeling is that a formidable Trident force would consist of [deleted] squadrons [deleted] submarines roughly divided between the Atlantic and the Pacific. The [deleted] boats that you are hypothesizing would be a part of that.

Senator Nunn. So what you are saying is that if you were to cancel the MX for any reason hypothetically that a [deleted] boat Trident operation would cover the same number of targets that your present Trident plans would cover plus the number that the MX would have covered had it been built?

Admiral Williams. It could be handled in that fashion, yes.

Senator Nunn. Does that then mean that you are really talking about [deleted].

Admiral Williams. No, sir. The decision has not been made. We have been looking to the future and we have seen a need to reinforce the strategic Triad as a whole. We don't want to deny anyone an opportunity to capitalize on the attributes of a submarine force.

Senator Nunn. You are assuming [deleted] boats with the Trident II; is that right?

Admiral Williams. Yes, sir.

Senator Nunn. All right. When could you have [deleted] boats with the Trident II available?

Admiral Williams. Under the President's program of one per year, at the end of this century we will be coming [deleted].

Senator Nunn. What would be the capabilities of speeding that up, say, if you wanted [deleted] boats 5 or 6 years earlier? Is that within the realm of possibility?

Admiral Williams. Yes, sir.

Senator Warner. An adjunct question to that is: Is it within the realm of possibility to speed up the Trident II missile?

Admiral WILLIAMS. Admiral Clark answered and said yes, he thinks it is.

Admiral KELSO. We don't think we have the capability to build better than about 1½ ships a year, Senator, with about a 6-year building time, and we certainly haven't demonstrated anything better than that. So you can speed it up somewhat, but you won't probably be able to speed it up much more than that, unless you want to spend a lot of money.

Senator WARNER. How about if you went to a second yard?

Admiral KELSO. That is what I was going to say, unless you decided you wanted to go to an additional builder or something like that, and then you basically are paying a pretty healthy bill to start him up in doing that.

Mr. GAFFNEY. Could I ask one question and try Senator Nunn's question another way? I believe you used the figure of [deleted] boats equipped with a C-4 missile gives you essentially the capability that we have with 31 Poseidon boats. If you were to go to the D-5 missile what would the corresponding number of Trident boats be? Do you have any idea?

Admiral WILLIAMS. [Deleted.]

Mr. GAFFNEY. So if you are just keeping what you have at sea today as a constant, for the purposes of this discussion and you want to add the [deleted] surviving RV's that Senator Nunn was addressing as the substitute for the MX then you are in the ball park of [deleted] Tridents with a D-5?

Admiral WILLIAMS. I would offer that it would be a mistake in this day and age for the Navy to just replicate our present capability.

Mr. GAFFNEY. I appreciate that. We are just trying to understand the model that you are using.

Admiral WILLIAMS. You are about right. You know, [deleted] is what the Navy says looks like a fairly substantial and appropriate force for a lot of reasons, but we should not limit our thinking about doing what we can today. We need a capability where we can strike the full spectrum of targets from the security of the sea-based system. We can't rely on just one leg of the Triad to have that unique and peculiar capability and that increases the requirement for inventory over and above what we have today.

Mr. GAFFNEY. Your comment about not relying on one leg of the Triad to have that capability leads us back to Senator Nunn's point about the desirability of maintaining some counterforce capability based on U.S. soil.

Do you agree?

Admiral WILLIAMS. Oh, I thought you were saying it leads back. You are correct, it does. You can't argue it both ways. You can't be in favor of the Triad from one side of the fence and not the other.

Mr. GAFFNEY. Right.

Senator NUNN. Mr. Chairman, I don't have any other questions.

Senator WARNER. Mr. Riedel?

SLBM'S

Mr. RIEDEL. I think there is one more point that we ought to explore. I think there is a general perception in this country that the SLBM's are basically an inaccurate weapon and I think a certain amount of doubt that arises when you start talking about the D–5 as being a hard target kill capability improved accuracy weapon. What confidence do you have and what progress have you made in demonstrating that indeed the accuracy is possible to attain and is not some pipedream?

Admiral **Williams**. I think Admiral Clark can talk to that eloquently.

Admiral **Clark**. Well, the confidence that we have in the accuracy improvement capability is based on the accuracy technology program, the improved accuracy program which has been funded since 1975 and will be complete this year, fiscal year 1982. In that program we have gained a rather extensive understanding of the error contributors in the Trident I system and we also have expanded the technology associated with improving the accuracy through new components like gyros and accelerometers and new navigational equipment.

The progress that we have made, which is actually based on building hardware in the advanced development program and testing it (including some testing at sea of the navigational components) leads us to have, I think, rather high confidence that we can make a considerable improvement on the Trident I accuracy, which I would point out is considerably better than the original goal.

So I feel quite comfortable with being able to make a significant improvement in accuracy for Trident II.

Mr. **Riedel**. I have seen a chart that shows the main components of your error budget for SLBM's and it shows what your goals were for the C–4, what you actually achieved and what improvements you have to make for the D–5. Would that be possible to put that in the record?

Admiral **Clark**. It certainly will be. I will provide that. We have such a chart and I can provide it for the record.

[The information follows:]

TRIDENT II

[Deleted.]

Mr. **Reidel**. I think it would also be useful to document what components, that are necessary to achieve this accuracy in D–5, have actually been built and tested or some work done with them. Describe where you are with all the critical components.

Admiral **Clark**. We can do that.

[The information follows:]

TRIDENT II

The critical components I believe you are referring to are identified on the technical improvements chart I've just provided. More specifically, in the ship's navigation system they are the velocity measuring sonar and the gravity sensor system, and in the missile guidance system they are the gyro, the stellar sensor and the accelerometer. All of these components have been under extensive evolution and advanced development as part of our Improved Accuracy Program which started in 1975. As part of this technology program, hardware has been built and tested. Although much of the testing has been in the laboratory, some tests have been at sea. Let me now address these components in a little more detail as they contribute to our D–5 accuracy goal [deleted].

In the Trident I navigation system, velocity is a major error source. The initial velocity errors in the Trident II weapon system will be significantly improved by use of a velocity measuring sonar. Two concepts were developed and compared during the Improved Accuracy Program with a correlation sonar being selected for further development. Testing of a developmental model at sea on the USNS Vanguard has demonstrated measurement performance [deleted]. Present understanding of this concept indicates a performance potential [deleted].

Incomplete knowledge of the local gravity results in errors in submarine initial position, velocity and heading. A Gravity Sensor System (GSS) could make measurements which would be used to estimate vertical deflection and local gravity resulting in a reduction in position, velocity and heading errors. In addition these measurements could also permit a partial correction of inflight gravity where adequate gravity surveys have not been performed. Laboratory testing of gravity instruments to date provide data which indicates system performance [deleted]. In areas where acceptable gravity survey maps exist, or where surveys are planned for the future, performance is expected to be [deleted] uncertainty resulting in a navigation CEP contribution [deleted]. This gravity map data will also be used in the fire control system to improve the accuracy of trajectory computations thus reducing inflight gravity errors.

In the guidance subsystem we are presently in the final phase of evaluating two competing gyro designs. Ten instruments have been procured and tested and selection between these two designs is presently scheduled for early 1982. Laboratory testing at the component and system level indicates that we can reduce the CEP contribution of the new gyro [deleted].

In the area of Stellar Sensors, the component which makes a platform correction inflight by a star sighting, we are presently evaluating three competing technical approaches: an improved Vidicon, similar to that used in Trident I, and two solid state devices (the charge coupled device and the charge injected device). Laboratory tests of the sensors have shown a [deleted] sighting uncertainty compared to the Trident I value [deleted]. This performance improvement of this instrument can reduce the CEP contribution of this instrument [deleted].

An accelerometer design evolved as a result of the Improved Accuracy Program and twelve prototype instruments have been procured and laboratory tested, both at the component as well as at the system level in a Guidance Evaluation Model. Results to date indicate that we can expect the CEP contribution of this instrument to be [deleted] more accurate than the accelerometer used on Trident I.

ACCURACY DEVELOPMENT PROGRAM

Mr. LEHMAN. In the past this committee has strongly supported the accuracy improvement program and has for the last 2 years stressed the D-5 version of the Trident II. Typically it has been worded this way, that we want an optimal missile even at the expense of some acceleration in the IOC. Your testimony has been in the past is that you were fairly confident that you could achieve your accuracy goals with a 1989 IOC. You have testified in the past that you could have a much earlier IOC but the risk on performance was much greater. Of course, time has passed and we are getting closer and closer.

Today you are telling us that you think you could probably get the IOC [deleted]. My question is how much risk is there in terms of achieving your goals?

Admiral CLARK. If we accelerate it [deleted]. I really can't quantify the risk, but I think certainly one would have to recognize that there would be some risk that you would not achieve quite the accuracy objective that we are talking about.

However, I should point out that it would be our plan, and it is our plan as a matter of fact in the baseline program, to have an operational test program shortly after deployment, something on the order of 40 operational test missiles fired as soon as we can after deployment.

From the evaluation of that data base we could make a very precise measurement of the accuracy and the error contributors and we could then make further improvements if in fact we were short in meeting our objective. So I think we could follow that early IOC rather quickly with some improvements if necessary.

Mr. LEHMAN. Recently in the press there has been a great deal of attention given to bias. The people who have been concerned about the errors in ICBM accuracy resulting from bias have said that even ICBM's have far worse accuracy than is estimated officially.

Now, in your case it would seem bias would be a more complex problem because you are attacking from more different angles. Could you address, first of all, the bias question in theory and then with respect to the accuracy improvement program and the ability to deliver on the D-5 accuracy?

Admiral CLARK. Well, certainly one of the major concerns in the accuracy is that you might have a bias. I mean, you worry about systematic errors as well as random errors in a system and it is the systematic errors that could lead to a bias in your accuracy.

I would say that based on the Trident I flights experience we have no substantial bias and we have fired quite a number of submarine firings—something on the order of about 35 missile firings from submarines and on a number of different trajectories and from several different launch points an advantage, incidentally, that we have over the ICBM's in our test program.

I do not anticipate right now that there would be any significant bias in the Trident II accuracy, but it is a thing that you must constantly be concerned about and the way to deal with it is to understand as best you can the error contributors in your weapons system.

Mr. LEHMAN. With respect to SLBM accuracies there seem to be several kinds of concerns and risks that are raised. One is the fact that you are trying to localize a submarine that is moving from place to place. The second is that it is in fact itself moving when it fires. The third is that various accuracy improvement techniques are sometimes dependent on outside sources either for localizing the submarine or for getting the fix for the missiles.

Could you comment now and in some detail for the record on the operational factors that influence accuracy, aside from just theoretical accuracy of the missile, and, second of all, the techniques that you are looking at to solve those problems and give us some of the advantages and disadvantages of the various techniques and how good the performance is.

That is mainly for the record, but if you could sort of summarize them right now.

Admiral CLARK. I am not sure I got all the questions but we can certainly provide that in some detail for the record.

Let me just make this comment. Of course, one of the fundamental differences between the SLBM and the ICBM is the moving platform. So the position of the submarine and the velocity of the submarine at time of missile launch is one of our major error contributors.

In the improved accuracy program we have actually built hardware for the navigation system which makes a considerable improvement in reducing the uncertainty in the velocity of the submarine which is one of the controlling errors in the Trident I system. That has been tested at sea in our navigation test vehicle and the test results certainly support our accuracy projections.

One of the other concerns that you have is the gravity field, anomalies in the gravity field, and it is compounded whenever you are firing from a moving platform because you are continuously moving through anomalous gravity fields that change with the time as a position of the submarine changes.

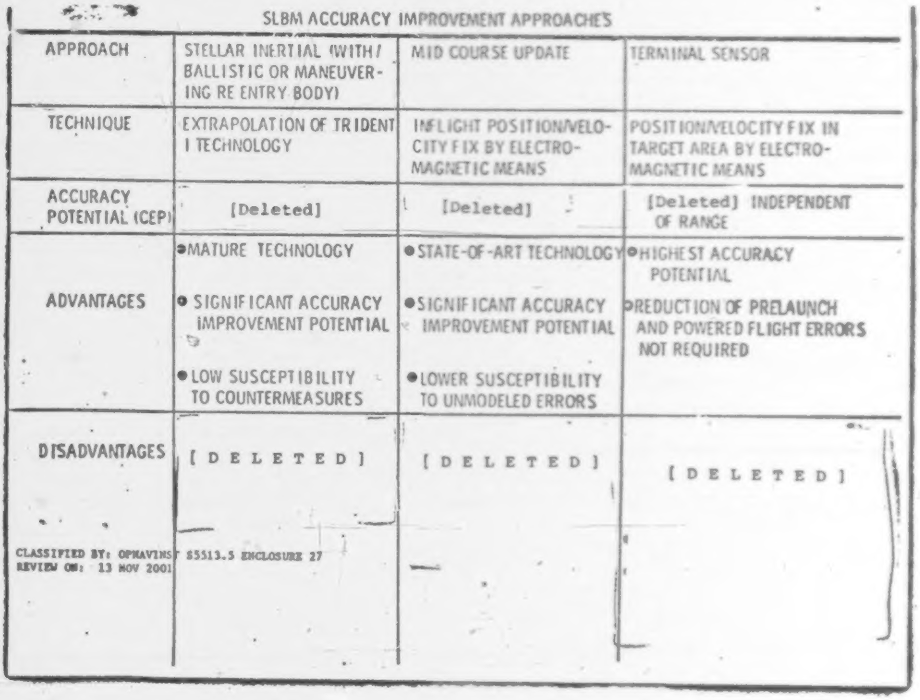
The way to deal with that, of course, is to have gravity data through surveys by survey ships, which are currently underway [deleted].

[The information follows:]

TRIDENT II

Since the submarine is a moving launch platform, the primary operational factors contributing to system performance ~~are the ship's position, velocity,~~ and heading, and because the submarine moves through an ever changing gravity field, gravity is also an important factor. In order to correct for inaccuracies which may occur in each of these areas, we have focused our efforts on technological improvements which can minimize the effect of these inaccuracies. Referring back to the previous chart, you notice that our work is primarily an extrapolation of what we did in Trident I, and you can see from that chart the kind of performance we are expecting.

While there are other techniques to improve SLBM accuracy, we have decided upon the Stellar Inertial Guidance System for our baseline. The Stellar Inertial has the least technological risk and is the least susceptible to vulnerability threats. The following chart addresses three basic alternative approaches to improving SLBM accuracy including the pros and cons of each approach.



SLBM ACCURACY IMPROVEMENT APPROACHES

APPROACH	STELLAR INERTIAL (WITH/ BALLISTIC OR MANEUVERING RE ENTRY BODY)	MID COURSE UPDATE	TERMINAL SENSOR
TECHNIQUE	EXTRAPOLATION OF TRIDENT I TECHNOLOGY	INFLIGHT POSITION/VELOCITY FIX BY ELECTROMAGNETIC MEANS	POSITION/VELOCITY FIX IN TARGET AREA BY ELECTROMAGNETIC MEANS
ACCURACY POTENTIAL (CEP)	[Deleted]	[Deleted]	[Deleted] INDEPENDENT OF RANGE
ADVANTAGES	• MATURE TECHNOLOGY • SIGNIFICANT ACCURACY IMPROVEMENT POTENTIAL • LOW SUSCEPTIBILITY TO COUNTERMEASURES	• STATE-OF-ART TECHNOLOGY • SIGNIFICANT ACCURACY IMPROVEMENT POTENTIAL • LOWER SUSCEPTIBILITY TO UNMODELED ERRORS	• HIGHEST ACCURACY POTENTIAL • REDUCTION OF PRELAUNCH AND POWERED FLIGHT ERRORS NOT REQUIRED
DISADVANTAGES	[DELETED]	[DELETED]	[DELETED]

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Senator WARNER. All right, Admiral, we thank you very much. I think we have pretty well covered it. I will insert additional questions for the record.

[Questions with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JOHN W. WARNER

MISSILE TUBE LEVELS

Senator **WARNER**. Admiral Williams, in your opening statement you mention that we may achieve a potential maximum number of missile tubes in the fleet by fiscal year 1992 of 832. What assumptions go into arriving at that number?

If we were to return to a 1½ submarine per year building rate what would the maximum number of missile tubes be and what would the corresponding minimum number be after all Poseidon boats are withdrawn from service?

Admiral **WILLIAMS**. This assumes that two Trident submarines are authorized in 1983, one Trident per year thereafter and that the Poseidon submarines are retired after a nominal life of 30 years. Under the base line program, all Poseidon submarines would be retired by 1999 and a 20 ship Trident force would be achieved by 1998.

If we were to return to a one and a half (1½) submarine per year building rate, the number of launch tubes in the force would peak at a maximum of 856 in 1992. Under this program we could achieve a 20 ship Trident force in 1995, three years earlier than in the base line case. If we continued to build at the rate of 1½ per year we could have a force of 26 Tridents (624 tubes) by 1999, the year in which all Poseidon submarines will have been retired.

TOTAL TRIDENT SUBMARINE BUY

Senator **WARNER**. Admiral Williams, what is the Navy's current thinking about the optimal size of the Trident submarine fleet? Is that driven by cost, number of tubes or warheads at sea, the missile with which the ship is equipped, supportability or other factors?

Admiral **WILLIAMS**. The ultimate size of the Trident submarine force will depend upon many factors: the role which the national leaders decide the SLBM will play in our future strategic force structure, possible arms control agreements, the type of missile (D–5 or C–4) with which the ship is equipped, and costs. As I indicated in my testimony a force of about 20 Tridents if equipped with the D–5 missile, would provide a formidable survivable capability at sea on a day to day basis. A force of this size could provide a capability equal to that of today's Poseidon force and [deleted] surviving MX plus provide about [deleted] missiles for a Secure Reserve Force.

TRIDENT CONSTRUCTION RATE

Senator **WARNER**. Admiral Kelso, what are the practical implications of adopting a one-per-year building rate for Trident submarines?

What effect are you expecting that rate will have on schedules, cost, availability of a fleet of twenty Ohio-Class submarines, and the need for funds in Fiscal Year 1982 for work related to an Atlantic Coast Base for Trident subs?

Admiral **KELSO**. The Poseidon submarines will reach the end of their 30 year service life in the 1990s. We need to replace these aging ships, and the presently programmed building rate of one per year is adequate to accomplish this. A Trident building rate comparable to that of the Poseidon ships is not required for two reasons: each Trident submarine is far more capable than the Poseidon submarine, particularly in terms of missiles carried and destructive capability; and secondly, we have commenced building Tridents at a steady rate in advance of the Poseidon Submarine Force's retirement. This yields a further advantage in that we will not be faced with a similar problem of block obsolescence for Trident submarines. Force effectiveness will continually improve because of the improved accuracy and greater yield of the more modern missiles which will be carried in these launchers. The force effectiveness will take a quantum jump when the new Trident-II (D–5) missile enters the fleet in 1989.

Historically, the actual authorization rate for the Trident submarine over the past few years has in fact, been a little better than a one per year rate without significantly impacting on costs and schedules. The tenth submarine which Congress deferred in the fiscal year 1982 bill without prejudice, will be requested in fiscal year 1983 together with the one Trident submarine (eleventh) already planned. A one per year building rate will have no effect on or alter the need for funds in fiscal year 1982 for the commencement of construction at the Trident Base at Kings Bay, GA. These funds are necessary to ensure the base meets the planned IOC of 1989 which is predicted on both the IOC for D–5 missile (which will deploy first from Kings Bay) and the delivery of the eleventh ship expected in mid 1989.

SUBMARINE-LAUNCHED CRUISE MISSILE

Senator **Warner**. The SLCM has always been attractive as a fairly low cost, fairly quick addition to our nuclear forces. But there has always been the great debate over how they could effectively be deployed without detracting from other conventional missions and sduplicating existing nuclear capabilities. Is the SLCM force to be integrated into the SIOP, and if so, how?

Admiral **Kelso**. The sea launched nuclear land attack cruise missile (TLAM/N) is not planned for commitment to the SIOP or the NATO general strike plan. TLAM/N will be a theater nuclear weapon deployed on general purpose forces. It will be available for selective release in non-SIOP options and in a post-SIOP environment it will contribute to the strategic reserve force.

Senator **Warner**. Is it anticipated that SLCMs will be stationed close in off the coast of the Soviet Union?

Admiral **Kelso**. The sea launched nuclear land attack cruise missile (TLAM/N) will be deployed on general purpose forces. This deployment will be on a not-to-interfere basis with the primary mission of these platforms. Operations of general purpose naval forces in proximity of the Soviet coast is governed by operational requirements of the fleet commander and is not a function of whether they are carrying TLAM/N missiles.

Senator **Warner** Is the Administration's emphasis on a long endurance nuclear war driving you toward a deployment doctrine which basically has SLCMs stored on attack subs to be fired at some late date in retaliation?

Admiral **Kelso**. Deployment of nuclear land attack cruise missiles on a large number of naval vessels will result in a distribution of significant firepower from a wide variety of platforms. These platforms will enjoy the survivability of mobile seaborne forces. These missiles are not committed to the SIOP or NATO's general strike plan and will not be automatically launched in a general war scenario. The net result is a survivable force of significant capability which the Soviets cannot eliminate in a first strike effort. Deterrence will thus be significantly strengthened. In addition, the United States would, in any post-nuclear exchange environment, retain a measure of coercive power.

Senator **Warner**. Is it anticipated that there will be a follow-on SLCM program to increase probability of penetration against the Soviet threat projected in the late 1980s and 90s?

Admiral **Kelso**. The penetration capability and survivability of the SLCM's has been and continues to be a vital part of the *Tomahawk* program. We continue to assess survivability and address improvements to the missile or operational employment procedures to ensure that cruise missiles stay ahead of defensive systems. The current program projects a highly survivable missile through the 80s and into the 90s. However, continued assessment of Soviet capabilities is required.

Senator **Warner**. The many versions of the SLCM use many common components and it has not been uncommon to find us talking about SLCM production rates as if there were no difference among the missiles. Nevertheless, they perform many different missions. Could you describe for us the different models of SLCMs which we plan to procure, tell us what they do, and tell us how many of each kind are in the total buy and in the five-year plan?

Admiral **Kelso**. Currently there are four models of SLCM's as follows:

a. *Tomahawk* (*BGM109A*). This is a nuclear land attack variant designed to provide extremely accurate strikes against theater targets with a strategic reserve role. Acquisition begins with 4 in fiscal year 1982. Through the five-year plan (fiscal year 1987), [deleted] would be procured. The total inventory objective is [deleted].

b. *Tomahawk* (*BGM–109B*). This variant is designed to provide a long range anti-ship attack capability. Acquisition began with 3 in fiscal year 1980, is projected at [deleted] through fiscal year 1987 with a total inventory objective of [deleted].

c. *Tomahawk* (*BGM–109C*). This is a conventional land attack variant using the unitary BULLPUP warhead (1000 lb.) which is a moderate hard target penetrator. Acquisition began with 3 in fiscal year 1980, is projected at [deleted] through fiscal year 1987 with a total inventory objective of [deleted].

d. *Tomahawk* (*BGM–109D*). This variant has a warhead section [deleted]. This variant is in development and is projected to achieve operational capability about [deleted]. Procurement quantities have not been defined but BGM–109D's will probably displace a portion of the BGM–109C's.

Senator WARNER. What versions of the SLCM are you looking at which you are not going to procure?

Admiral KELSO. The Navy has looked at an [deleted] version (BGM-109F) but neither development nor procurement is planned. The Navy and Air Force are jointly developing the Medium Range Air-to-Surface Missile (MRASM) which has Tomahawk variant model numbers AGM-109L (Navy) and AGM-109H (Air Force). Procurement quantities of the AGM-109L have not been established.

SLBM ACCURACY

Senator WARNER. This Committee has strongly endorsed the SLBM Improved Accuracy Program. Nevertheless the technical community remains divided over the best way to proceed and over the kinds of accuracies which can actually be attained at sea with these different techniques.

Could you describe for us all of the various techniques which you have reviewed for achieving high accuracy at sea, give us the advantages and disadvantages of each, and tell us what levels of performance you now anticipate from those being pursued?

ANSWER. Over 800 different techniques have been advanced and reviewed during the eight year Improved Accuracy Program and all of them can be subdivided into three basic approaches for achieving high accuracy at sea. In brief summary these approaches are shown in the following chart with the advantages and disadvantages of each.

SLBM ACCURACY IMPROVEMENT APPROACHES

Approach	Stellar inertial (with ballistic or maneuvering reentry body).	Mid-course update	Terminal sensor.
Technique	Extrapolation of Trident I technology.	Inflight position/velocity fix by electromagnetic means.	Position/velocity fix in target area by electromagnetic means.
Accuracy potential (CEP) advantages.	Deleted at 4,000 NM; mature technology; significant accuracy improvement potential.	Deleted at 4,000 NM; State-of-art technology; significant accuracy improvement potential.	Less than deleted independent of range; highest accuracy potential; reduction of prelaunch and powered flight errors not required.
Disadvantages	Requires reducing many error contributors and understanding interrelationships.	Susceptible to countermeasures; no missile application experience with technology.	Testability. overland testing. trajectory/scene variation; least developed technology; susceptible to countermeasures; range payload penalty.

Senator WARNER. Is the problem of "bias" a greater problem for SLBM's than for ICBM's and how much of a problem is bias?

ANSWER. The problem of "bias" is basically the same for SLBM and ICBM. The problem with bias can be quite troublesome in a system with many error sources. Our understanding of bias has improved significantly as a result of the Improved Accuracy Program and I do not anticipate any problem with bias in the development of D-5. We will have sufficient information available from specific instrumentation to detect and correct any bias problems should one occur.

Senator WARNER. Could you tell the committee your views on how accurate you will be able to make the D-5 at sea when operationally deployed?

ANSWER. The expected CEP outcome of the D-5 accuracy development program for a submarine launched stellar inertially guided ballistic missile is between [deleted] at 4000nm.

RETAINING POSEIDONS

Senator WARNER. What are the factors driving the plan to decommission the Poseidon submarines when they reach the thirty year point?

Has careful thought been given to trying to stretch that service life further and equipping the entire Poseidon fleet with longer range C-4 missiles? What would you expect to be the costs associated with backfitting the remaining vessels, broken out by missile procurement costs, costs associated with retrofitting the ships themselves and associated Milcon and O&MN?

Admiral KELSO. The 31 Poseidon submarines were commissioned in the four year period between April 1963 and April 1967. Initially they were designed for a 20 year life. In 1978, a study was initiated to determine the feasibility of extending their life to 30 years. It has been determined that the hull strength will permit an extension to 30 years and perhaps beyond; however, the technology which was available at the time these ships were designed make operations beyond 30 years ill advised.

Stretching the service life of Poseidon submarines beyond 30 years is not currently considered to be a viable option for the reasons previously stated. Equipping the entire Poseidon fleet with C–4 missiles has been studied and rejected as not cost effective. Conversion of SSBNs would require about $22 million per SSBN. There is a clear tradeoff between using funds for near term gains (conversions) as opposed to deployment of a larger throw-weight more accurate Trident II missile which will provide the United States with a survivable weapon that is effective against the entire spectrum of targets.

Conversion of SSBNs is estimated to be $22 million each. A total of 378 missiles would be required at a cost of $3500 million. Only the submarine base at Kings Bay, Ga., has the required explosive safety arc space available to homeport Trident-I backfit submarines. Milcon costs there to accommodate the extra submarines is estimated at $160 million. Annual O&M costs would not be substantially higher for C–4 equipped ships over C–3.

U.S.S. OHIO SEA TRIALS

Senator **Warner**. After all the controversy concerning the quality control problems and cost overruns involved in construction of the Trident submarine SSBN-726, I was delighted to learn of its performance in sea trials. Can you tell us what problems, if any, were discovered in sea trials? How did the submarine acoustic and other signatures compare with specs?

Admiral **Kelso**. The ship performed extremely well on sea trials with only minor problems being experienced, none of which are unusual for the first ship of a class. The OHIO bettered its performance design specifications in speed and quietness. The ship's characteristics required a maximum speed of [deleted]. During full power runs the actual speed achieved was [deleted]. *Ohio* is also quieter than designed. Initial acoustic data determined that, at a patrol speed of [deleted], *Ohio* is on the average [deleted] quieter than design (which was set [deleted] below prior SSBN classes).

D–5 IOC

Senator **Warner**. Admiral Williams, you testified today that you are pleased that the President committed to an IOC of 1989 for the D–5. I believe the program was being funded at a level which supported only a 1990 IOC last year. Earlier this year the Committee received testimony that the planned IOC for D–5 was still 1989 if the program was continued. Can you explain this apparent inconsistency?

Admiral **Williams**. The IOC has always been planned and funded for the end of calendar year 1989, specifically [deleted]. Since this is actually in fiscal year 1990, some confusion may have evolved when references were made to the IOC and calendar year vs. fiscal year was not stated.

EHF COMMUNICATIONS

Senator **Warner**. One of the Senate Armed Service's Committee initiatives in the C^3 area adopted yesterday as part of the conference on the fiscal year 1982 DOD Authorization Bill is funding to accelerate R&D on an interim EHF package for the FLTSAT satellites and a new multi-mission EHF satellite. How important do you believe the introduction of extremely high frequency communications capabilities into the fleet to be?

Admiral **Kelso**. I consider the introduction of EHF communications to be vital to the fleet. The EHF system capability to transmit a high data rate signal which has excellent anti-jam characteristics and a low probability of intercept represents a significant enhancement in battle group communications.

PROLIFERATED THREAT

Senator **Warner**. Admiral Williams, the Navy continues to stress in testimony that SSBN survivability is an issue independent of the number of threatening Soviet warheads. Technically, that is not exactly correct. This Committee has received testimony in the past that future SSBN survivability could be a function both of the numbers and types of enemy warheads and the enemy's ability to localize the submarine. That is, to the degree that submarines can be localized, there

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is a number of warheads which can barrage it. As localization gets better, the number of enemy warheads required for a barrage goes down. Is that correct?

Admiral **Williams**. It is true that if localization gets better and the area which must be barraged decreases, the number of warheads of a given yield required to barrage the area decreases.

The Navy has stated that the SLBM force is not sensitive to further Soviet fractionation of their missile payload. This is so because the area that can be bombarded is a function of missile throwweight not numbers of RVs. For example, if a SS-18 missile with its [deleted] payload could barrage an area of X square miles, loading the SS-18 with a larger number of smaller yield warheads would not increase the area it could effectively bombard since each RV has a smaller effective radius due to its lower yield.

DOCKSIDE MISSILE LAUNCH

Senator **Warner**. What factors should be considered in any discussion of launching missiles from dockside?

Admiral **Kelso**. The Poseidon missile system is designed for either a submerged or surfaced launch. Although the surface launch could theoretically take place in a harbor, it was intended to be used at sea away from populated areas where there would be no restrictions on ship maneuvers. If one were dockside, considerations would have to be given for the safety of any personnel on or around the dock. The exhaust gases from the first stage rocket motor would be a significant factor as well as the possibility of a defective missile that could wander off course or fail completely and fall back to earth. In the latter case, the failed missile could strike the launching submarine which would cause varying degrees of damage.

Senator **Warner**. Thank you very much, gentlemen.

[Whereupon, at 10:36 a.m., the closed session concluded.]

STRATEGIC FORCE MODERNIZATION PROGRAMS

TUESDAY, NOVEMBER 3, 1981

U.S. SENATE,
SUBCOMMITTEE ON STRATEGIC AND
THEATER NUCLEAR FORCES,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

STRATEGIC COMMAND, CONTROL, AND COMMUNICATIONS

The subcommittee met in open session pursuant to notice. at 2:38 p.m., in room 212 Russell Senate Office Building, Senator John W. Warner, chairman, presiding.

Present: Senators Warner, Quayle, and Levin.

Staff present: Rhett B. Dawson, staff director and chief counsel; Brenda K. Hudson, assistant chief clerk; Frank J. Gaffney, Ronald F. Lehman, E. George Riedel, James C. Smith, professional staff members, and Karen A. Love, staff assistant.

Also present: Buzz Hefti, assistant to Senator Warner; Jim Dykstra, assistant to Senator Cohen; Robert Nichols, assistant to Senator Jackson; Frank Krebs, assistant to Senator Cannon; Greg Pallas, assistant to Senator Exon; Peter Lennon, assistant to Senator Levin.

OPENING STATEMENT BY SENATOR JOHN W. WARNER, CHAIRMAN

Senator WARNER. My apologies to the witnesses for the delay in starting this hearing. As you undoubtedly have noticed, the Senate just had two back-to-back votes and I happen to be one of the comanagers of the bill that was being voted upon, so my presence on the floor was essential.

It is striking that one of the least controversial aspects of the President's strategic force modernization program is the emphasis placed upon upgrading our command, control, and communications network.

As the witnesses in this room well know, even as recently as 1 year ago, it would have been difficult to find so broad a consensus of support for the expenditure of the substantial sums needed for the C^3 program. Indeed, I believe that the witnesses today deserve much of the credit for developing the awareness at the highest levels of our Government of the need to upgrade our command, control, and communications systems that facilitate the strategic deterrent of this Nation.

I am pleased to say that this subcommittee, early on in the 1982 authorization hearings, recognized the shortcomings and took, likewise, a lead in adding funds for this purpose.

We are here today to review the President's specific proposals. I will place my statement in the record to save time.

[The prepared statement of Senator John W. Warner follows:]

PREPARED STATEMENT BY SENATOR JOHN WARNER, CHAIRMAN

It is striking that one of the least controversial aspects of the President's strategic force modernization program is the emphasis placed upon upgrading our command, control and communications network. As the witnesses in this room well know, even as recently as one year ago, it would have been difficult—if not impossible—to find so broad a concensus of support for the expenditure of vast sums of C^3 programs. Indeed, I believe that the gentlemen who will testify before this subcommittee today deserve much of the credit for developing an awareness at the highest levels of our government of the inadequacies of our present command, control, and communications systems and for helping needed remedies achieve the budgetary priority they have now been given.

I am proud to say that this committee, in no small part influenced by previous testimony of these and other Defense Department officials, acted in advance of the President's own initiative, to provide in the fiscal year 1982 Defense Authorization bill nearly $100 million for C^3 enhancements aimed at correcting some of the system's most glaring shortcomings. Our House counterparts have accepted these initiatives in their entirety and they should shortly become law. We will learn today to what degree we have, by our action, anticipated and permitted acceleration of President Reagan's C^3 modernization program.

Once again, I am happy to welcome The Honorable James P. Wade, Jr., Principal Deputy Under Secretary of Defense for Research and Engineering (Designee); Mr. T. K. Jones, Deputy Under Secretary of Defense (Strategic and Theater Nuclear Forces); Mr. Donald C. Latham, Deputy Under Secretary of Defense (Communications, Command, Control and Intelligence); Lt. Gen. Hillman Dickinson, Director, Communications Command, and Control Systems, Office of the Joint Chiefs of Staff; Vice Adm. Gordon Nagler, Director, Command and Control, Office of the Chief of Naval Operations; and Brig. Gen. Bernard P. Randolph, Director, Space Systems and Command, Control and Communications.

Senator WARNER. Senator Levin, do you have an opening statement? If not, we will proceed with the witnesses, each giving short statements in an open hearing and then it will be necessary for the Chair to call for an executive session.

Senator LEVIN. I simply have questions, Mr. Chairman. I do not have an opening statement.

Senator WARNER. Fine. I thank the distinguished Senator from Michigan. We now will proceed.

Mr. Wade, kindly introduce your panel.

STATEMENT OF DR. JAMES P. WADE, JR., PRINCIPAL DEPUTY UNDER SECRETARY OF DEFENSE (RESEARCH AND ENGINEERING), ACCOMPANIED BY T. K. JONES, DEPUTY UNDER SECRETARY OF DEFENSE (STRATEGIC AND THEATER NUCLEAR FORCES); DONALD C. LATHAM, DEPUTY UNDER SECRETARY OF DEFENSE (COMMUNICATIONS, COMMAND, CONTROL AND INTELLIGENCE); LT. GEN. HILLMAN DICKINSON, DIRECTOR, COMMUNICATIONS, COMMAND, AND CONTROL SYSTEMS, OFFICE OF THE JOINT CHIEFS OF STAFF; VICE ADM. GORDON NAGLER, DIRECTOR, COMMAND AND CONTROL, OFFICE OF THE CHIEF OF NAVAL OPERATIONS; AND BRIG. GEN. BERNARD P. RANDOLPH, DIRECTOR, SPACE SYSTEMS AND COMMAND, CONTROL AND COMMUNICATIONS DIRECTORATE, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION, HEADQUARTERS, U.S. AIR FORCE

Dr. Wade. Thank you, Mr. Chairman, for your very warm remarks. On my left is Mr. Latham, the Under Secretary of Defense for C^3I. To my right is Vice Adm. Gordon Nagler, U.S. Navy, who is here representing C^3 matters for the Navy. On his right is Lt. Gen. Hillman Dickinson from the Joint Staff, and then Brig. Gen. Randy Randolph from the Air Force. And behind me is Mr. T. K. Jones, the Deputy Under Secretary of Defense for Strategic and Theater Nuclear Forces.

Mr. Chairman, I would suggest that I provide a short summary of my prepared statement and then ask Mr. Latham to present to the subcommittee, in unclassified form some additional comments on the important initiatives that we're just undertaking under new leadership as part of and in support of the 1982 authorization bill. And then we have prepared for the subcommittee, for closed session, a highly classified briefing which would present the total program in context.

Mr. Chairman and members of the subcommittee, it is my privilege to appear before you today to discuss the strategic communications command and control C^3 elements of the Reagan administration's program for revitalizing our strategic deterrent posture.

It is our firm belief that the C^3 element is one of the most important but least mentioned parts of our comprehensive plan to redress serious weaknesses in our current strategic posture. It is one of the areas which has been most neglected over the past 10 years. Without an adequate C^3 capability our strategic forces, modern or old, strong or weak, cannot be operated. It is vital that we proceed with a major C^3 program.

This was a unanimous recommendation in the development of the administration's total program and about which we had no question at all. An improved C^3 capability as part of the mutually reinforcing elements of our strategic deterrent program will determine, to a significant extent, U.S. strategic capabilities into the next century.

Our strategic communications, command, and control programs stress capability, survivability, and endurance. They should provide timely warning of an attack so the President may respond appropriately, and be as survivable as the nuclear forces so the forces can serve as instruments of our national policy.

The C^3 systems will be developed or improved to make sure we can communicate with our forces during an attack, immediately following an attack, and, if necessary, for extended periods thereafter. These C^3 improvements will greatly assist in strengthening the deterrence of nuclear war by denying the Soviets any realistic prospects, however they may define them, of gaining an advantage by their initiating the use of nuclear weapons.

Our strategic C^3 program addresses three primary areas: warning and attack assessment, command center decisionmaking facilities, and communications. In addition, let me address some elements as to strategic defense and C^3. Strategic defense is one of the vital elements of the administration's strategic deterrence program.

As part of our multifaceted strategic defense effort we will initiate major C^3 projects to correct deficiencies and improve coverage in the North American air surveillance network, which has been virtually ignored for over a decade. We plan to upgrade the network in coordination with Canada. The plan will include some combination of new over-the-horizon backscatter radars and improved versions of the ground radars that exist today. Development efforts toward more enduring sensors will also be started.

In the command post and aids-to-decisionmaking area we are upgrading the survivability and capability of command centers that would direct U.S. strategic forces during a nuclear war. This will include the deployment of E-4B airborne command posts to serve the National Command Authority in time of war.

The EC-135 airborne command posts serving military commanders will be hardened against nuclear effects and will be equipped with upgraded satellite and very low frequency/low frequency communications to enhance their ability to communicate with the National Command Authority and pass decisions to our strategic forces.

Our strategic communications programs are structured so that we will deploy survivable communications which link command centers with all three legs of the Triad.

Very low frequency/low frequency communication receivers will be developed and installed on strategic bombers to insure their reception of orders.

We will upgrade communications to deployed submarines; and a new satellite communication system will be developed providing extremely high frequency communication channels that would insure two-way communications from our national command centers to force commanders.

Complementing these much-needed strategic communications, command and control acquisition programs will be a vigorous and in-depth research and development program leading to C^3 systems that would endure for an extended period beyond the first nuclear attack.

In conclusion, a comprehensive and integrated C^3 program is an absolute necessity to implement any plan for revitalizing our strategic deterrent regardless of the composition and quality of our forces. Our program takes the first steps toward providing such a credible strategic C^3 posture.

We will support these steps by providing a technology R. & D. base for their continued improvement and to determine what additional steps may be needed. Particular emphasis will be placed in the areas of endurance throughout a protracted conflict and reconstitution following an attack.

Mr. Chairman, this concludes my remarks. I would be happy to answer any questions you or the committee might have at this time.

[The prepared statement of James P. Wade follows:]

PREPARED STATEMENT OF DR. JAMES P. WADE, JR., PRINCIPAL DEPUTY UNDER SECRETARY OF DEFENSE (RESEARCH AND ENGINEERING)

Mr. Chairman and Members of the Committee: It is my privilege to appear before you today to discuss the Strategic Communications, Command and Control (C^3) elements of the Reagan administration's program for revitalizing our strategic deterrent posture. It is our firm belief that the C^3 element is one of the most important, but least mentioned, parts of our comprehensive plan to redress serious weaknesses in our current strategic posture. It is one of the areas which has been most neglected over the past ten years. Without an adequate C^3 capability our strategic forces, modern or old, strong or weak cannot be operated. It is vital that we proceed with a major C^3 program. This was a unanimous recommendation in the development of the administration's total program and about which we had no question at all. An improved C^3 capability as part of the mutually reinforcing elements of our strategic deterrent program will determine, to a significant extent, U.S. strategic capabilities into the next century.

Our Strategic Communications, Command and Control programs stress capability, survivability, and endurance. They should provide timely warning of an attack so the President may respond appropriately, and be as survivable as the nuclear forces so the forces can serve as instruments of our national policy. The C^3 systems will be developed or improved to make sure we can communicate with our forces during an attack, immediately following an attack, and, if necessary, for extended periods afterwards. These C^3 improvements will greatly assist in strengthening deterrence of nuclear war by denying the Soviets any realistic prospects, however they may define them, of gaining an advantage by their initiating the use of nuclear weapons.

Our Strategic C^3 program addresses three primary areas: warning and attack assessment, command center decision making facilities, and communications.

In the warning and attack assessment area we have a significant number of on-going and new initiatives. We will improve the survivability, performance and coverage of radars and satellites used to warn us of a Soviet missile attack and to assess its size and scope. We will deploy several mobile ground terminals for processing data from our warning satellites. Mobile systems such as these are virtually impossible for the Soviets to target. The satellites themselves will be upgraded to improve survivability. Warning satellites and ground based radars will be improved to provide better estimates of the size and objectives of a Soviet missile attack, whether it be SLBMs or IBCMs.

Additional PAVE PAWS surveillance radars will be deployed to improve coverage of potential Soviet submarine operating areas to the southeast and southwest of the United States.

Strategic defense is one of the vital elements of the administration's strategic deterrence program. As part of our multi-faceted strategic defense effort we will initiate major C^3 projects to correct deficiencies and improve coverage in the North American Air surveillance network, which has been virtually ignored for over a decade. We plan to upgrade the network in coordination with Canada.

The plan will include some combination of new over-the-horizon backscatter (OTH-B) radars and improved versions of the ground radars that exist today. Development efforts toward more enduring sensors will also be started.

In the command post and aids-to-decision making area we are upgrading the survivability and capability of command centers that would direct U.S. strategic forces during a nuclear war. This will include the deployment of E-4B airborne command posts to serve the National Command Authority in time of war. EC-135 airborne command posts serving military commanders will be hardened against nuclear effects and will be equipped with upgraded satellite and very low frequency/low frequency communications to enhance their ability to communicate with the National Command Authority and pass decisions to our strategic forces.

Our strategic communications programs are structured so that we will deploy survivable communications which link command centers with all three legs of the Triad.

Very low frequency/low frequency communications receivers will be developed and installed on strategic bombers to ensure their reception of orders.

We will upgrade communications to deployed submarines.

A new satellite communications system will be developed providing extremely high frequency communication channels that would insure two-way communications from our national command centers to force commanders.

Complementing these much-needed strategic communications, command and control acquisition programs will be a vigorous and in-depth research and development (R. & D.) program leading to C^3 systems that would endure for an extended period beyond the first nuclear attack.

CONCLUSION

A comprehensive and integrated C^3 program is an absolute necessity to implement any plan for revitalizing our strategic deterrent regardless of the composition and quality of our strategic forces.

We must be able to accurately sense and estimate the specific objectives of an attack; communicate with our forces prior to, during, and after an attack; and retain the ability to direct our strategic forces in a counter thrust, the strength of which will be so unacceptably high to the Soviets, they will be deterred from initiating an attack.

Our program takes the first steps toward providing such a credible strategic C^3 posture. We will support these steps by providing a technology R. & D. base for their continued improvement and to determine what additional steps may be needed. Particular emphasis will be placed in the areas of endurance throughout a protracted conflict and reconstitution after an attack.

Mr. Chairman, this concludes my remarks.

Senator WARNER. Thank you. If there are no further statements by the witnesses I will proceed with some opening questions and then will defer to my colleague from Michigan. I will direct this to the panel and Dr. Wade, you in turn will determine which of the witnesses is best qualified to provide the answer.

As you know, the Senate adopted a number of significant initiatives aimed at providing improvements to the strategic C^3 system. These initiatives predated the announcement by the President of his intention to make major improvements of his own to this network.

Now that the Senate/House conference on the fiscal year 1982 authorization bill has endorsed virtually all of the programs, we need to know in what ways do these congressional initiatives conform to the President's plan. Do they permit acceleration of key programs? How much importance do you attach to their being adequately funded in the appropriations process?

Mr. LATHAM. If I might, sir, I would like to answer that for you. We have two vugraphs which summarize the initiatives that you supported, sir, and they are shown here.

FISCAL YEAR 1982 SASC ADD-ON

	Authorized	Accounts not authorized
PAVE PAWS Expansion	3.8	71.0
Scintillation effects	5.6	
PAVE PAWS EMP test	1.0	
EMP-critical facilities	1.8	5.2
PACCS EMP hardening	2.0	
Satellite coverage continuity		92.0
EHF Satcom	61.2	
PAVE PAWS power		23.0
VLF/LF improvements	5.6	
DSP ground station power cooling	1.0	
Electric power modernization	.9	.4

Mr. LATHAM. The two or three that I would like to discuss first are these. The first one is the PAVE PAWS expansion, which is part of the President's program, which would add a southeast and southwest PAVE PAWS site to the existing two northern sites for complete coverage around the Conus and would add dual phenomenology coverage in the Southern Hemisphere. So we would strongly support that.

The satellite coverage continuity, No. 6 on the chart, is to provide for additional FLTSATCOM satellites with AFSATCOM transponders on those and the EHF package on the FLTSAT 7 and 8 to provide a much broadened capability for connectivity, moving early into EHF satellite capability, and to extend our strategic UHF coverage until the new MILSTAR satellite can take up the full load.

On item 7, moving on to the EHF SATCOM, this initiative would move us out smartly into a much needed capability which is again a part of the program to put into orbit the new extremely high frequency [EHF] satellite communications system called MILSTAR to serve the strategic and tactical users.

So those three major initiatives we would strongly support as well, obviously, as being quite interested in the other initiatives. We would like to see them happen as well.

FISCAL YEAR 1982 SASC ADD-ON

	Authorized	Accounts not authorized
MGT No. 6		32.0
ERCS	6.8	
Dist. missile attack conf	2.0	
Afsatcom secure voice	10.0	4.5
Airfield locators		5.0
Survivable, enduring communications	7.0	
Total	108.7	233.1

Mr. LATHAM. The remaining initiatives are shown here. AFSAT COM secure voice would provide additional secure voice capability, which we would certainly like to see. On the mobile ground terminal initative, the sixth terminal, for readout of our satellite early warning system would be very, very helpful to us, and that is, again, part of our program.

So in general, sir, these are all part of the strategic package that we have proposed to the President.

Senator **Warner**. And you attach a very high degree of importance to their being adequately funded?

Mr. **Latham**. Yes, sir.

Dr. **Wade**. Senator Warner, let me add to your comment. As you are aware, we conducted, at the direction of the President, a Strategic Connectivity Study which started back in late April. Most of our focus was on the 1986–87 time period and we will go into that in the closed hearing.

What is most helpful from the initiatives your committee proposed, looking back at 1982, is they have given us a leg up to get there faster and we appreciate it very much.

Senator **Warner**. Thank you. What are your professional priorities among the initiatives added by the Senate and what degree of urgency do you attach to the funding of these programs by the Appropriations Committee?

Mr. **Latham**. Yes, sir. If I have to prioritize these initiatives as they are shown here, sir, I believe we absolutely would put the PAVE PAWS upgrade and the southeast and southwest sites as No. 1 on the list.

The second on the list would be the EHF satellite capability. The third would be of equal priority and is in the communications satellite arena. That is the additional FLTSATCOM capabilities, Nos. 6, 7, and 8. I would prioritize those as sort of like one and two and two, if I could do that.

Senator **Warner**. Would the other witnesses from the military services care to comment if they have a different priority?

Admiral **Nagler**. No, sir.

General **Randolph**. No, sir.

General **Dickinson**. I think we have no significant differences. I think we believe the entire program gives us a very helpful lead.

Senator **Warner**. Thank you. Mr. Latham, are the budgets for some of the critical C^3 enhancements sought by the President in this plan predicated on congressional funding of certain items which were accelerated in the fiscal year 1982 authorization bill at the initiative of the Senate?

Mr. **Latham**. Yes, sir, some of these that we just discussed here.

Senator **Warner**. Would you detail them, please, for the record?

Mr. **Latham**. Yes, sir. I would be glad to do that.

[The information follows:]

C^3 ENHANCEMENTS

PAVE PAWS.
EMP.
EHF SATCOM.
VLF/LF Improvements.
ERCS.
AFSATCOM Secure Voice.
Survivable, Enduring Communications.

Senator **Warner**. Mr. Latham, to what degree would the President's C^3 modernization program be adversely affected by the failure of the Congress to provide funds for the C^3 upgrades authorized in the recently-completed House/Senate conference authorization?

Mr. **Latham**. For example, these moneys for the PAVE PAWS sites. If those are not approved we will slip the IOC and PAVE PAWS slides at least 1 year, if not longer. If we don't get the military SAT

COM initiatives, we would slip that a year for every year we don't get the money. So it has a direct impact on the availability of these assets. It would be quite serious.

Senator **Warner.** The General Accounting Office published in late September 1981, a report requested by the chairman of the House Appropriations Committee Defense Subcommittee dealing with the need for additional FLTSAT spacecraft. Recognizing the sensitivity of this open session on the GAO report and of your own personal and corporate attitudes toward the need for further procurement of FLT SAT satellites as provided for in the fiscal year 1982 defense authorization bill?

Mr. **Latham.** Yes, sir. We discussed that internally and we disagreed with the GAO report. We strongly believe that we do need to procure 6, 7, and 8 FLTSATS. As you know, sir, No. 5, which was launched on August 6, had a malfunction during the launch portion and it is not a usable satellite.

We believe that until MILSTAR can be on orbit and fully operational we must continue the UHF coverage since we have a very large investment in UHF terminals. We strongly support going ahead with that and would not agree with what the GAO concluded, sir.

Senator **Warner.** Would the representatives of the three services care to elaborate?

Admiral **Nagler.** I fully support that from the Navy. I am Admiral Nagler from the Navy. In addition, Mr. Carlucci has signed out for the record on behalf of the Secretary of Defense.

Where we do not agree with the GAO report, as one example, they attributed equal communications capability with the multichannel transponders that you could put on DSCS III to communicate with our submarines and that is impossible unless you go through the TACAMO aricraft. So the Navy fully disagrees with that report, sir.

Senator **Warner.** What about the Department of the Army?

General **Dickinson.** Really, speaking from the Joint Staff, sir, we certainly support the need for the FLTSAT capability and in particular the earliest possible package for the EHF capability which will be aboard the FLTSAT 7.

General **Randolph.** The Air Force also strongly supports 6, 7, and 8. We particularly need that, as you know, sir, as part of the Air Force satellite communications system.

Senator **Warner.** Turning now to the ELF program, as you know the President's program was to proceed with a small-scale version of the extremely low frequency ELF communications system. How do you rank this system in importance vis-a-vis the other C^3 initiatives which will be forthcoming in the fiscal year 1983 request?

Dr. **Wade.** Mr. Chairman, my preference would be to examine the total package of C^3 and in particular how it supports the forces at hand. We have deployed today: CBM's, bombers and submarines; and, one of the key aspects of this package is to enhance the C^3 element as fast as we can across this total force.

ELF is an important element in making sure that our SLBM force both in the mid-term and in the far term, remain as vitally secure from attack as they are today. We believe that having this enhanced capability on line by 1985 is consistent with the total thrust of our strategic program. The Department of Defense fully supports moving out quickly and placing the ELF system on line with an IOC of 1985.

ELF is, in effect, added insurance; the system will tell the Soviet Union as they pursue their own ASW R. & D. program that the job in front of them will be much more difficult than it is today.

Would you like to add to that, Admiral?

Admiral NAGLER. Yes, I would like to add to that, if I may. We need to maintain the required connectivity to our submarines. No one system will do it, Mr. Senator. The ELF, combined with TACAMO gives us much more insurance and as Dr. Wade said makes it much more difficult for the Russians to interrupt that system.

Senator WARNER. Would you add, Admiral, that it provides for increased survivability of our submarines and the safety at sea of the men who operate them?

Admiral NAGLER. Yes, sir. I don't know how much we want to get into that in open hearing, but it does. ELF is well known. If we move the submarine from operating close to the surface it consequently increases the difficulty of the Russian Navy to locate those submarines.

Senator WARNER. And that in turn protects the lives and safety of the men who operate those submarines?

Admiral NAGLER. It certainly protects the lives of the men who operate those submarines, yes, sir.

Senator WARNER. At this time I will defer to my colleague from Michigan for any questions that he might have.

Senator LEVIN. Thank you, Mr. Chairman.

A number of years ago when the first ELF system was proposed I believe it was called SHELF. It was a 6,000-mile system. It was touted as being necessary for the protection of men in our subs.

A little later on that was reduced to a 4,000-mile system called Sanguine. Later on that was reduced to a 2,400-mile system called Seafarer. All of these were touted as being necessary to protect the lives of the men who are in our subs.

A little while later that was reduced from 2,400 miles to 158 miles and in project ELF, 130 of which are in Michigan. Project ELF was also touted as being the minimum need in order to protect the men in our subs. Now we are being told that that Michigan mileage will be cut in half, from 130 to 56 miles in Michigan.

In March 1981, a memo recommended against ELF which was signed by the CNO, who said the following. The CNO said, as you know, I have had a strong concern about the survivability of our strategic C^3 structure for some time. At the same time that the study that he is referring to highlighted the urgency of the solution of the C^3 problem, the latest estimation of costs for the proposed minimum-sized extremely low frequency ELF system raised the estimate of that system's cost to about $0.5 billion.

Based on that, the CNO recommended against ELF just a few short months ago. Now if the $500 million, 130-mile system in Michigan was the minimum ELF size just a few months ago that the Navy said it needed, how can you justify a smaller, less capable system?

Admiral NAGLER. I will take that on behalf of the Navy, if I may. May I put into perspective the Chief of Naval Operations' comments? I would like to quote from what the CNO has stated. The Chief of Naval Operations does support the development of an ELF system at the level of investment now proposed.

> The problem has always been meeting new important strategic and command and control needs within limited resources. While modernizing our primary survivable very low frequency airborne transmission system is a top priority, the small but improved ELF system approved by the President complements it in several important ways. This improved ELF system adds a new dimension of capability altogether independent from the airborne system and will provide continued insurance against an unforeseen Soviet submarine warfare breakthrough.

That is a quotation from Admiral Hayward personally. To answer the rest of your question, you are completely correct, Mr. Senator, in the way you describe it from SHELF to ELF over the last 20 years. Also the threat against the United States in the last 20 years changed appreciably.

Up until this administration we have had great difficulty, as has been said here, in developing the strategic command and control program. Through the efforts of the Secretary of Defense and the President one has been developed this year. There are many parts to that program and ELF plays an important part in the total package, as I said earlier.

We did not want to spend money unnecessarily and $0.5 billion has been cut in half by the redesign of ELF. We still have about the same capability with some improvement to the transmitter work that we anticipated with a longer antenna. Overall, we think that ELF is extremely important when put into the total package of strategic connectivities.

Senator Levin. Is the present ELF of lesser capability than the 56-mile one? Excuse me, the 130-mile one.

Admiral Nagler. That is a very difficult question to answer because it has been R. & D.'ed and we are postulating what this will give us. By the proper design we think it is going to be six of one or half dozen of the other. I cannot really answer that question for about another year, sir.

Senator Levin. So what you are saying is although the CNO described the 130-mile system in Michigan as of minimum size, as recently as March of this year he and the Navy no longer think that is the minimum size. Is that correct?

Admiral Nagler. That is correct. We are satisfied. The CNO is satisfied with the 56 miles in Michigan and the 28 miles in Wisconsin tied together as a total system.

Senator Levin. Do you need Michigan's permission to build the 130-mile system?

Admiral Nagler. I do not believe so myself, personally.

Senator Levin. Have you checked with your lawyers on that?

Admiral Nagler. Yes, sir.

Senator Levin. Have your lawyers advised you that you do not need the State of Michigan's permission to build that system through State forests?

Admiral Nagler. That is not a simple question to ask.

Senator Levin. Oh, it was simple to ask, but the answer may not be so simple.

Admiral Nagler. Yes, sir. The Government of the United States has the right to defend the United States, sir.

Senator Levin. There is no doubt about that, of course, but have your lawyers specifically advised you that that system can go ahead without Michigan's consent through State forests?

Admiral **Nagler**. Senator, you know how lawyers work things. I would say that our legal counsel—well, naturally we would like the State of Michigan's consent, but the State of Michigan cannot veto the project, according to the information we have received from our counsel.

Senator **Levin**. Let me phrase my question again. Have you been advised by your counsel that you can proceed without Michigan's consent if you don't get it?

Admiral **Nagler**. I would like to take that for the record, Mr. Senator, because the way that question is specifically worded I don't think that is the exact question we asked the counsel. But I would like to check that so I don t mislead you. May I take that one for the record?

Senator **Levin**. Have you been given a written opinion by your counsel?

Admiral **Nagler**. Yes, sir, and I am going by memory now, sir, because that is about a 2-year-old opinion. That is why I want to check it for the record.

Senator **Levin**. Would you submit a copy of that opinion also for the record?

Admiral **Nagler**. I will process that request, yes, sir.

[The information follows:]

STRATEGIC COMMAND, CONTROL, AND COMMUNICATIONS

Admiral **Nagler**. Portions of the memorandum for the Chief of Naval Operations (OP-941) from the Navy Judge Advocate dated 18 April 1979 that are responsive to the question follows:

Subj: Legal force of any commitments in Department of Defense correspondence purporting to convey to the Governor or people of Michigan "veto" power over Project ELF.

Ref: (a) CNO (OP-941D) memo 941D-37-79 of 4 Apr 79.

(b) Governor, State of Michigan ltr of Sept 9, 1975 to Dir, Telecommunications and Command and Control Systems, OSD, Subj: Project Seafarer.

(c) Dir, Telecommunications and Command and Control Systems, OSD ltr of 22 Sep 1975 to Honorable William G. Milliken, Governor of Michigan, Subj: Project Seafarer.

(d) Governor, State of Michigan ltr of Dec 12, 1975 to SECDEF, Subj: Project Seafarer.

(e) DEPSECDEF ltr of Feb 10, 1976 to Honorable William G. Milliken, Governor of Michigan, Subj: Ongoing Project Seafarer site-selection process.

(f) SECDEF ltr of Mar 17, 1977 to Honorable William G. Milliken, Governor of Michigan, Subj: Project Seafarer.

(g) Governor, State of Michigan ltr of Mar 24, 1977 to SECDEF, Subj: Correct text of telegram on Project Seafarer from Governor Milliken to SECDEF, w/encl.

(h) DEPSECDEF ltr of Apr 9, 1977 to Honorable William G. Milliken, Governor of Michigan, Subj: Project Seafarer.

(i) DEPSECDEF ltr of Jul 9, 1977 to Honorable William G. Milliken, Governor of Michigan, Subj: Smaller ELF System.

(j) Governor, State of Michigan ltr of 12 Aug 1977 to President of the United States, Subj: Opposition to location of Project Seafarer in Michigan.

(k) President of the United States ltr of Sept 24, 1977 to Governor William Milliken, Subj: Project Seafarer.

(1) SECNAV ltr of 26 May 1977 to Mr. Edward P. Kearney, Assistant News Director, WLUC-TV, Marquette, Michigan, Subj: Questions on Project Seafarer.

1. Reference (a) requested comments on the legal force of any commitments in references (b) through (k) purporting to convey "veto" powers over Project Seafarer to the Governor or people of Michigan. Comments were also requested on what legal problems might arise if a Michigan site were approved.

2. On 9 September 1975, the Honorable William G. Milliken, Governor of the State of Michigan, extended a conditional invitation to the Department of De-

fense in reference (b) to prepare an environmental impact statement and a public opinion survey on Project Seafarer in the Upper Peninsula. The Governor closed the letter by emphasizing that ". . . many questions must be answered before Michigan [can] give the project anything resembling a green light." The invitation was accepted in reference (c).

Subsequently Governor Milliken expressed concern in a letter to the Secretary of Defense (reference (d)):

> That the Navy may attempt to locate the Seafarer system in Michigan despite the ultimate wishes of the people of the area or the findings of the environmental impact statement.

The Governor asked for confirmation that the Department of Defense ". . . did not intend to recommend a Michigan site to Congress . . ." if he objected.

3. In reference (e), the Deputy Secretary of Defense in a letter to Governor Milliken responded, in pertinent part, as follows:

> As you know, our basic role in the site selection process, once the relevant data have been studied, will be to recommend a candidate site to the Congress in conjunction with the annual budget process. I think that some of the recent public concern can be traced to a misunderstanding of the relative responsibilities of the Department of Defense and the Congress in such matters.
>
> You have my every assurance that a Department of Defense decision to add Michigan as a final candidate site along with those in Nevada and New Mexico would be made only with your concurrence. In short, I can confirm, as you requested in your December 12 letter, that I would not recommend a Michigan site to Congress if you object. The installation and operation of a project of this magnitude would not be possible without the support of the people.

From Governor Milliken's viewpoint, the Department of Defense had agreed to consider Michigan as a site for Project Seafarer only with Governor's concurrence.

4. On 31 January 1977, Governor Milliken wrote to the President of the United States asking for confirmation of his agreement with the Department of Defense. Presidential assistant, Mr. Jack Watson, responded on 4 February 1977, by assuring Governor Milliken in a telephone call that the basic understanding would be honored. Mr. Watson added that this would be confirmed by letter. On 17 March 1977, the Secretary of Defense in a letter to Governor Milliken (reference (f)) stressed the importance of public opinion in the decisionmaking process on Project Seafarer, but failed to confirm any right on the part of the Governor to "veto" construction of Project Seafarer in Michigan. The Secretary concluded with the words "(c)ertainly [Project Seafarer] would not be installed should there be an overwhelming consensus of the people of Michigan against such an action."

5. This immediately prompted Governor Milliken to send a telegram to the Secretary of Defense (enclosure (1) of reference (g)) which included the following pertinent language:

> I have repeatedly received assurances from the Department of Defense, confirmed by the White House, that Seafarer would not be built in Michigan if I object.
>
> Mr. Secretary, I object.
>
> I object on several grounds, including those relating to the conditions I set, including the right to veto, at the time of the Navy's initial consideration of a Michigan site . . . I can assure you there is a clear consensus of Michigan sentiment against Seafarer . . . (T)he people of the Upper Peninsula, as well as the people of all of Michigan, do not want Seafarer.

The Deputy Secretary of Defense responded in reference (h) by urging Governor Milliken to review his decision on Project Seafarer after all the factual information was available.

6. On 26 May 1977, the Secretary of the Navy, in reference (1), stated:

> Governor Milliken has never been given the right to "veto" the building of SEAFARER in Michigan. The statement quoted by you from former Deputy Secretary of Defense Clements' February 10, 1976 letter [see para. 3 above] does not establish or convey a right of "veto," but rather recognizes the importance placed on responsible public opinion in the decisionmaking process.

7. Governor Milliken, on 12 August 1977, in a letter to the President of the United States (reference (j)) reiterated his opposition to locating the project in Michigan and asked for confirmation ". . . that the wishes of the people will be respected." President Carter, in reference (k), responded:

> If I determine that it is necessary to proceed with Project Seafarer, the wishes of the people of the Upper Peninsula will be a controlling factor in my decision on whether or not the Project is built in Michigan.

I appreciate your interest in this issue and I look forward to your continued advice and counsel.

8. The correspondence described above generally reflects concern on the part of the Department of Defense (DOD) and the President of the United States for public opinion in the decisionmaking process on Project Seafarer. Congress has demonstrated similar concern for the opinions and views of state and local authorities. See H.R. Rep. No. 517, 94th Cong., 1st Sess. 289 (1975); H.R. Rep. No. 1255, 93rd Cong., 2d Sess. 139 (1974). Governor Milliken's concern, meanwhile, has been with establishing that the project would not be built in the Upper Peninsula over the objections of the people of Michigan or himself.

9. One letter in particular, reference (e), has been relied on by Governor Milliken as granting him the power to "veto" the construction of the Extremely Low Frequency (ELF) communication system in Michigan. A careful review of reference (e) indicates, however, that the then-Deputy Secretary of Defense, Mr. Clements, clearly stated that DOD's only role at that time was to make recommendations to the legislative branch. Congress would decide where to build Project ELF.

10. The President and members of the executive branch, regardless of their motives or purpose, cannot impair or restrain the constitutional power of the legislative branch to provide for the common defense of the United States, even in advance of war, to provide and maintain a Navy, to make rules for the government and regulation of the land and naval forces, and to make all laws which shall be necessary and proper for executing the foregoing powers. See U.S. Const. art. I, para. 8; Youngstown Sheet and Tube Co. v. Sawyer, 343 U.S. 579 (1952); United States v. Kaiser Aetna, 408 F. Supp., 42, 55 (D. Hawaii 1976); United States v. 243.22 Acres of Land, 43 F. Supp. 561 (E.D.N.Y. 1942), aff'd 129 F. 2d 678 (2nd Cir. 1942), cert. denied 317 U.S. 698 (1943). On the other hand, the President has, for Fiscal Year 1979, has been properly empowered by the Congress to determine whether or not development of the ELF system is in the national interest and, if so, where to build it. See U.S. Const. art. II, Para, 2, cl. 1, and para. 3, cl. 1; Department of Defense Appropriation Authorization Act, 1979, Pub. L. No. 95–485, para, 202, 92 Stat. 1161, 1612; Ex Parte Quirin, 317 U.S. 1 (1942).

11. Even if Project ELF posed some danger to the individuals living nearby, the State of Michigan does not retain the power under the Tenth Amendment of the Constitution of the United States to block its construction in the Upper Peninsula. See U.S. Const. amend X; Holdridge v. United States, 282, F. 2d 302, 308 (8th Cir. 1960).

12. It should be noted that the courts are reluctant to review substantive decisions relating to the national defense and national security, absent a showing that the decision was reached arbitrarily or without regard for procedural requirements, because of the delicate security issues involved and the constitutional delegation of these concerns to the political departments of our government. Concerned About Trident v. Schlesinger, 400 F. Supp. 454, 482–3 (D.D.C. 1975), remanded on other grounds 555 F. 2d 817 (4th Cir. 1977). See Baker v. Carr, 369 U.S. 186 (1962). There is no evidence here of arbitrariness or a disregard for procedural requirements, nor is the government bound by the ordinary rules of private contract law or by doctrines of estoppel or waiver when, as in this case, it is seeking to protect a public interest, namely national security. See Sanitary District v. United States, 266 U.S. 405, 426–27 (1925); Utah Power & Light Co. v. United States, 243 U.S. 389, 409 (1916); McQuagge v. United States, 197 F. Supp. 460, 469 (W.D.La. 1961). In summary, it is the opinion of the Judge Advocate General that any perceived commitments made in DoD correspondence to the Governor or people of Michigan of purported "veto" power over the construction of Project ELF in the Upper Peninsula are not legally binding.

JOHN S. JENKINS,
Rear Admiral, JAGG, U.S. Navy,
Deputy Judge Advocate General.

Senator LEVIN. Now this February on the 27th, I asked Admiral Carter, who is the head of the Navy's Nuclear Warfare Division, the following question. I would like to ask this of Admiral Carter. I believe it was in response to one of the chairman's questions at an earlier hearing this year that the CNO made the following statement and I would like to know whether or not you could concur.

He said that:

> I would note that the most serious deficiency in the Navy's strategic nuclear posture, in my judgment, is the lack of reliable, survivable communications with SSBN's at sea.
>
> Admiral CARTER. Yes, sir. I would agree.
>
> Senator LEVIN. And is the proposed ELF system a survivable system?
>
> Admiral CARTER. No, sir, it is not.

Senator LEVIN. My question to you, Admiral, is do you agree that this system is not a survivable system?

Admiral NAGLER. Mr. Senator, do you mind giving me your definition of "survivable?" Do you mean an atom bomb or a regular bomb? I don't know what you mean by that.

Senator LEVIN. Well, you folks talk about survivable systems, which you do all the time, as a matter of fact I believe Dr. Wade did so today in his own statement. He said the C^3 program stresses capability, survivability and endurance. So I'll use whatever definition you have.

Admiral NAGLER. Since Dr. Wade addressed that why don't I give him the question?

Dr. WADE. I would like to more fully address that for you, Senator.

Senator LEVIN. I will call on you in a moment, Doctor, but first let me ask the admiral this question. In what sense is this new system, which is above the ground for the first time, a survivable system?

Admiral NAGLER. If you are talking, Senator, about a nuclear exchange, then the ELF system is not survivable from a direct hit as it is currently designed.

As I recall, this committee has asked the Navy in 1982 if money is provided to study the feasibility—I think that is the correct word—of making it more survivable and to report back. We intend to do that if the money is provided.

Senator LEVIN. Is the above-ground system as survivable as a below-ground system?

Admiral NAGLER. The below-ground system is only a matter of inches, so I think again that is six of one or half a dozen of the other.

Senator LEVIN. So putting it above ground does not reduce its survivability?

Admiral NAGLER. No, sir. It is reducing the cost.

Senator LEVIN. Is it fairly easily accessible to hunters or to a saboteur to cut those wires?

Admiral NAGLER. I didn't bring a wire with me, but it would take an awful big set of bolt cutters and climbing of poles to do that. I assume anyone who made up his mind to do that could probably succeed, but we would certainly hope that we could prevent it.

Senator LEVIN. Well, are you going to patrol the fences through those miles?

Admiral NAGLER. No, sir.

Senator LEVIN. How would you prevent somebody from just entering into a State forest and cutting the wire?

Admiral NAGLER. It is not the easiest cable in the world to cut.

Senator LEVIN. Oh, I have seen the cable. I have a piece of it on my desk. But you just said that somebody who was intent on doing it can do it.

Admiral **Nagler.** Oh, I think someone intent on doing any sabotage, Senator, could do it.

Senator **Levin.** Would you say that this one is more easy than some. That is, sabotage could be done more easily than some? If it is going through a State forest with above the ground wires would not even concede that this would be readily susceptible to sabotage?

Admiral **Nagler.** No more than some of our other installations, Mr. Senator.

Senator **Levin.** That are critical to our command and communication with our submarines?

Admiral **Nagler.** I think it is open to sabotage, yes, sir. I don't think it is that easy.

Senator **Levin.** We have had a number of disruptions of power in K. I. Sawyer each year. I do not have the exact number but it is a number of power outages each year up at K. I. Sawyer. When this kind of outage takes place or the wire falls down in the Upper Peninsula because of snow or frost or whatever, are the subs going to have to come up each time?

Admiral **Nagler.** No, sir. Are you talking about if one segment of this wire——

Senator **Levin.** Yes.

Admiral **Nagler.** No, sir.

Senator **Levin.** How many segments would have to be out before the communication would be disrupted?

Admiral **Nagler.** I think extensive, but I would like to take that for the record also, Senator, to give you a factual answer.

[The information follows:]

STRATEGIC COMMAND, CONTROL AND COMMUNICATIONS

Admiral **Nagler.** Due to the fact that two sites will be in operation, [deleted].

Senator **Levin.** A major requirement for the Navy's strategic ballistic missile submarine forces to remain in continuous communication with the shore command authorities, the Navy has stated that the present communications systems create problems in meeting this requirement because occasionally the submarine has to break off contact to remain undetected or the towed buoy antenna malfunctions or is lost.

An ELF system is justified as a way to overcome this. I was informed just today by the Navy that the average time our missile subs spent out of communications contact during a 60-day deterrent patrol is 1 hour, 60 minutes, or if we wanted to compute the average, 1 minute per day.

Would you not agree that this 1 hour per 60-day patrol average demonstrates that we do not need ELF to maintain continuous communications contact with our subs?

Admiral **Nagler.** No, Senator, I don't agree with that.

Senator **Levin.** Are the figures wrong, do you know?

Admiral **Nagler.** No, sir, the figures are correct. I do not believe I am getting into a classified matter now, but the requirement for our FBM submarines to maintain continuous communication is 99.9 percent. We meet or exceed that figure.

At the same time, that requires a submarine to operate at, in this open hearing I would say, a shallow depth. We would like to not require that submarine to always be at shallow depth. ELF allows that submarine to go to a deeper depth.

Senator LEVIN. But the figures are correct, right, that the average time——

Admiral NAGLER. The figures are correct, sir.

Senator LEVIN. All right. I have just a couple of more questions, Mr. Chairman, at this time.

This goes back to the comments of Admiral Carter again. First let me get back to Dr. Wade, because I promised I would get to him. Do you agree with Admiral Carter's comments that ELF is not a survivable system?

Dr. WADE. I would like, first of all, to place your question in context, Senator Levin. And that is that the objective of each and every one of our new programs is to deter nuclear war, whether it is a C^3 system, or a weapons delivery platform like our submarines or ICBM's or bombers. That is the base general purpose of each of these new deployments.

For example, with the MX system or our new bomber systems, one of the deployment objectives is to enhance the prelaunch survivability of the new weapons system. The purpose of the ELF deployment is to enhance the survivability—the prelaunch survivability of the submarines platform. It is in that way that we enhance the probability that war will not take place. The submarine is what an ELF deployment is aimed at—improved system survivability.

And so you have to look at this new deployment in that context. Today ELF is not enduring, but it enhances the survivability of the submarines and therefore enhances the prospect that a war will not ever take place. We do have interest in endurance and as such we do have R. & D. programs underway to make sure a system more enduring. Our follow-on programs will result, in the 1990's, in significantly enhancing that particular capability. That is the context in which you need to weigh the ELF program.

In reference to CNO's comments on priorities, one of the key aspects of the DOD review that took place on strategic connectivity was to look at the total interrelated program. For example, when you note the follow-on MX ICBM program we will be deploying in the late 1980's as far as a permanent, enduring survivable basing mode or if you look at the fact that the new bomber force will be coming in in the late part of the 1980's, say in late 1986 actually extending into the early 1990 time period, then you will see that these new systems are not coming in until the later part of the decade.

The SLBM forces are on line now, and it was our judgment to implement ELF so as to enhance that system's viability into that time period when all these new weapon systems are on line. You have to look at ELF in the context of the total package, rather than simply ask one service where the priority for that system is vis-a-vis other services programs.

And it was in that context that the CNO fully supports the decision that was made with regard to ELF.

Senator LEVIN. Did you answer my question whether or not the proposed ELF system is a survivable system?

Dr. WADE. I answered the question in the context that it was posed, sir. It is not survivable once a war breaks out, but it enhances the probability that a war will not take place in the first place.

Senator Levin. Is that the sense in which a survivable system is usually used?

Dr. Wade. No, sir. We would like to have an enduring system. We just haven't technically solved that problem. If we ever do, we will move in that direction.

Senator Levin. Well, I asked you a pretty straight question on this one and I asked Admiral Carter a pretty straight question. I asked him whether it was a survivable system. Obviously nobody wants war to break out. My question is whether or not it's a survivable system?

His answer was no. Can you give us a forthright answer?

Dr. Wade. I said that the ELF is not an enduring system.

Senator Levin. That's all I asked him and that's what I was asking you. We obviously don't want war to break out.

Let me just see if you agree with Admiral Carter on a couple of other questions, Admiral. I asked Admiral Carter the following question:

> Admiral, you say that antisubmarine warfare is a war of attrition. Given the capability, it takes time, weeks or months, to detect and localize any significant portion of the submarine force. The question is this, would you agree that despite the expenditure of billions of dollars or rubles that the Russians have made in the past decades to improve their ASW capabilities that they have failed to develop such a detection and localization capability required to successfully attack and destroy our strategic missile submarines?
>
> Admiral Carter. Yes, sir. I would agree that is true.

Admiral, do you agree that is true?

Admiral Nagler. I agree that is true today, yes, sir.

Senator Levin. Would you say that that is reasonably likely to be true during the decade of the eighties?

Admiral Nagler. In the context of this hearing, which is open, and if we do our job correctly that will remain true, yes, sir.

Senator Levin. Admiral Carter also said earlier this year about the Soviet threat that:

> To degrade our deterrence significantly a large percentage of our at-sea submarines must be localized and attacked over a very short time span. Herein lies the principal difficulty for the Soviets. The capability of intermittent or occasional detection does not translate into near-simultaneous detection of large fractions of the force.
>
> Additionally there are very difficult problems of command, control and coordination associated with real-time targeting of a large number of nuclear warheads against a moving target in a short period of time.

Would you agree with that assessment, Admiral?

Admiral Nagler. Sir, I agree with that assessment.

Senator Levin. I think I'm over my 10 minutes, Mr. Chairman.

Senator Warner. Thank you. As you know, Admiral, I have worked with this program for over a decade. I want to make it quite clear that a number of the reasons which justify the American taxpayer going ahead with this expense to some extent in a certain geographical area of this country, accepting this military program, many of those reasons are classified as we cannot go into them at this time, isn't that correct?

Admiral Nagler. That is correct.

Senator Warner. The purpose for this hearing being part open and part executive is to share to the extent possible with the American public what we can tell them about the need for this program.

When we close this hearing momentarily you will provide the committee with the additional justification for this program, is that correct?

Admiral **Nagler**. Yes, sir.

Senator **Warner**. Senator Quayle, do you have any questions?

Senator **Quayle**. Thank you, Mr. Chairman. Did you say that the PAVE PAWS part of the package is the No. 1 priority?

Admiral **Nagler**. I think Mr. Latham was speaking of the Department of Defense at that point. PAVE PAWS is an Air Force program, so I would suggest that Dr. Wade or Mr. Latham answer you.

Mr. **Latham**. I was suggesting in the context of the add-ons that you gentlemen proposed in the 1982 budget earlier. If I had to prioritize those items in there, then I would urge that the PAVE PAWS be one of the very highest things that we go ahead with since it is part of our recommended strategic program for C^3.

Senator **Quayle**. How survivable is the land-based PAVE PAWS radar?

Mr. **Latham**. In the context of what we were just discussing, of a nuclear attack on the United States, do you mean?

Senator **Quayle**. I mean how survivable are they?

Mr. **Latham**. Well, it is not a hardened underground type of facility. It is a very large above-ground radar facility which a direct attack from a nuclear weapon would destroy.

Senator **Quayle**. So they basically are not survivable as such?

Mr. **Latham**. To a direct nuclear attack they are not, sir, that is correct. In the same context, however, as we are doing on ELF, we are actively examining methods and techniques to reconstitute that function but by other means.

Senator **Quayle**. What would be the consequences of their being put out of action?

Mr. **Latham**. You would lose for the time being, until the reconstitutable asset was put into being—and I will describe some of that in a classified hearing, how we intend to approach that—for that period of time that we didn't have that other asset on line you would lose the dual coverage which that system provides with the other sensor systems, the DSP program, for example.

Senator **Quayle**. Is this PAVE PAWS radar an interim system?

Mr. **Latham**. No, sir.

Senator **Quayle**. It is not an interim system?

Mr. **Latham**. Interim to what? It is a system that we would propose and have proposed as part of the package to expand from the two northern sites to the two southern sites. It would be a permanent part of the threat warning attack and assessment system. It would be one component of that.

Senator **Quayle**. So you don't see this as an interim thing? You see this is a long-term system, then. What about satellites? You don't see us getting away from the land-based radars?

Mr. **Latham**. We are examining in R. & D. programs alternatives to having things on the ground. That is part of the R. & D. for this reconstitutable and enduring asset. I would see that being a long ways in the future. So the PAVE PAWS will be with us for quite a while.

Senator **Quayle**. To the turn of the century?

Mr. **Latham**. Easily.

Senator **Quayle**. Easily to the turn of the century; OK.

Mr. LATHAM. We don't even get the fourth PAVE PAWS site on line (IOC) in the current program until about 1987, so I would say it would have a lifetime of 10 or 12 years.

Senator QUAYLE. Why can't we detect submarine launches from the advanced warning system, which is a survivable satellite system?

Mr. LATHAM. We do today. Our goal, however, is to provide a higher degree of insurance, the so-called unambiguous warning, for that we would like to have two different sensor systems using two different phenomenologies to give us absolute assurance of cover there. That is the difference.

Senator QUAYLE. You don't think we can get that assurance without the land-based radars, that we couldn't get it from the satellite system?

Mr. LATHAM. We would like to have a higher degree of assurance than you can justify with one single system. We would like to have dual phenomenology coverage.

Senator QUAYLE. How many land-based radars do we have now?

Mr. LATHAM. Two PAVE PAWS.

Senator QUAYLE. What is the recommendation?

Mr. LATHAM. For two additional PAVE PAWS sites.

Now to answer your question more explicitly, in the southern area we have an FPS-85 at Egland Air Force Base which is being used as an interim system, and down near Tampa there is another smaller, land-based radar that has been converted to look for SLBM launches. But they are a very limited capability. In fact they are getting quite old and will be phased out when the southeast PAVE PAWS site goes on line.

So we would have four such sites.

Senator QUAYLE. Which is the more reliable detection, PAVE PAWS or the satellite system?

Mr. LATHAM. It is not an either/or question, sir. I think they operate in a different mechanism and different points of the trajectory under different phenomenology. I don't think they can be compared in a question like that.

It is a very, very reliable system today. The two PAVE PAWS that are set up and operating today are very, very reliable in detecting launches that are practice launches or for satellite trajectories and things like that.

Senator QUAYLE. What is our biggest C^3I problem?

Mr. LATHAM. Making everybody believe the problem is real.

Senator QUAYLE. Do you think there is a lot of skepticism on whether the problem is real?

Mr. LATHAM. Yes, sir.

Senator QUAYLE. Let's go beyond that and assume the problem is real. What is the real C^3I problem?

Dr. WADE. Senator, if I may answer your question, C^3 is made up of a variety of program elements and every separate element is, in general, small in nature. When you talk about an ICBM or a bomber system, it is such a large interest item that the support is generally there to see the program through. It is quite easy when you examine, over the past years, the last-minute budget scrubs and see how the many small C^3 program elements have fared.

But there hasn't been a total look or a push to make sure C^3 as a total entity is deployed. I think, in the main, it has been a management problem more than anything else.

Senator Quayle. I'm sorry. I couldn't hear you.

Dr. Wade. It has been a management problem in part to see that the many and varied programs actually get deployed to the field.

Senator Quayle. A management issue?

Dr. Wade. Yes, sir.

Senator Quayle. Management is our main problem with the C^3I?

Dr. Wade. If you ask why haven't we succeeded in doing a better job over the last 10 years, it has been primarily a management failure.

Senator Quayle. Do the Soviets have any problems with the C^3I?

Dr. Wade. No, sir, not to the extent that we have.

Senator Quayle. They have no problems at all and we have problems.

Dr. Wade. We have the problems.

Senator Quayle. We have management problems and they have none. Why is that?

Dr. Wade. Well, I can't speak for the Soviets. All you can do is watch how well they perform. They have been very successful in deploying modern redundant, survivable, and enduring C^3 systems.

Senator Quayle. Do they have an advantage over us in C^3I?

Dr. Wade. In reference to looking at what we have and what we see coming on line, if we don't fix our deficiencies we will be in serious trouble.

Senator Quayle. Do they have an advantage?

Dr. Wade. I think today they do.

Senator Quayle. Today they do?

Dr. Wade. Yes, sir.

Senator Quayle. Does everybody else agree with that?

General Dickinson. I think they have an advantage in survivability. They have a tremendous amount of redundancy in their system.

Mr. Latham. I think you have to be very careful in answering that question.

Senator Quayle. In other words, you do think they have an advantage right now in C^3I?

General Dickinson. I said I believe they have a significant advantage in survivability of their system, which I think is probably our biggest problem.

Senator Quayle. You think our biggest problem is survivability, then?

Mr. Latham. Let me make sure that I understand, sir, the implication of your question. If you were to ask in peacetime who has the better system in C^3, then we have a better system. In terms of having provided for endurance and survivability, he has a better system because he has spent money to do things that we have not done yet in the form, say, of hardened facilities and mobile access and so on which I will describe to you later.

But you have to be very careful there. In terms of the "I" side of things, no, sir. No way. We have them beat hands down. So you have to be very careful how you address whether he has an advantage or not, or whether he has the best system.

Admiral Nagler. I will completely agree with Mr. Latham on that. His answer as far as peacetime crisis management or survivability, you have to take into account—and I will look at this from the Soviet Navy standpoint—that the Soviet Navy is just starting to become global and they have always had a different C^3 problem. They have been a lot closer to Russia and did not have to worry about the same thing the U.S. Navy has to worry about—command and control, three to four battle groups spread around the world 24 hours a day—so it is a different problem and hard actually to stack up one against the other for a simple answer.

Senator QUAYLE. Why is theirs more survivable than ours?

Admiral NAGLER. They have stressed that. I would suggest that we go into that in a closed hearing.

Senator QUAYLE. OK. I don t have any further questions, Mr. Chairman, not for the open session.

Dr. WADE. Mr. Chairman, I would suggest that we go into a closed hearing.

Senator LEVIN. May I ask just a few more questions first?

Senator WARNER. Senator Levin?

Senator LEVIN. Thank you, Mr. Chairman.

It seems to me the real question is the emphasis that the Navy and DOD now gives to capability, survivability, and endurance of our strategic communications command and control. We got an acknowledgement that ELF doesn't give us survivability, ELF by itself. I am not talking about the rest of the system, which I happen to support.

General, I happen to believe we need more survivability, endurance, and capability in our C^3, but ELF doesn't give us survivability. It doesn't give us endurance. The question is how much capability does it give us? If it is worth $250 million, which the CNO says it's worth, but it's not worth $500 million. In April, when the cost of it was $500 million and there was supposed to be 56 miles long, it wasn't worth it.

The CNO said he is opposed to ELF at that cost, but at $250 million it is worth it. That is how much capability it has in terms of protecting our men in submarines. How much capability does it add when the Navy still admits there is no reasonable foreseeability that it is needed in the 1980's, and I can tell you in open session what the Navy has said over and over and over again in open session, that there is no foreseeable need, at least until the 1990's and they won't even name a date in the 1990's on it, because the Soviet ASW simply does not have the capability, at least until the 1990's, according to testimony reiterated over and over again here, to detect our submarines.

Mind you, we are going to be patrolling a lot more ocean when we have the longer missiles by the 1990's. We are going to have, I don't know, 5 to 10 times as much ocean. What is the figure when we finally get the Trident II?

Senator WARNER. I think it is classified, but it is substantial.

Senator LEVIN. OK, it is substantial. It is significantly more ocean. So in terms of going into closed session and saying in open session, and again I want to thank the Chair for even allowing me to participate because I am not on this subcommittee, let me just say I am happy to go into closed session too, and get the specifics on how much more ocean and things like that are involved.

But in open session we have been told over and over again that at least until the 1990's there is no need, so we have deterrence without ELF at least until the 1990's. We are told that ELF isn't worth $500 million. It is only worth $250 million. We have been told that the latest

ELF, which is 56 miles long—and just conceive of this—which is 56 miles long is as much capable as the one which in April was 130 miles long and was said to be mimimal in terms of capability.

Next they probably presume we could cut it in half again to 28 miles and put the poles a little higher and then we will be told well, that still has as much capability, six of one or half a dozen of another. There is no credibility. There is just no credibility to the system which has shrunk from 6,000 miles to 84 miles.

Senator WARNER. Well, Senator, there could have been some improvement in technology which enables this smaller system to fulfill a measure of the earlier goal, but I respect the Senator's views and those of his predecessor.

I would like to make one closing general observation, but if the witnesses wish to reply to the Senator I would be happy to permit that.

Mr. LATHAM. Senator, if I could comment just for a second, the point that Dr. Wade made on the relative priority of this in the total strategic system context is very important. It is very imporant how ELF was prioritized. It was judged that at this figure, this size of system and this capability was worth having.

The second point is this. We must in peacetime practice and have the operational procedures and so on that we intend to use in wartime. Now let's turn it around the other way. Suppose the Soviets had an ELF system which allowed their submarines to dive deeper, run faster, and so on. What would be our response? We would work like the dickens on a whole set of new operational procedures, new hardware, and other things in order to now try to better improve our detection capability such that having gone from point x to x over 2, or whatever it is, they are going to try to get that back.

That is what ELF does for us. It stresses the Soviet Navy to the end now to try to come up with some new way to regain the probability of detection that they think they might have today with the submarines running shallower and slower. So his system has a wartime capability.

Senator LEVIN. A survivable capability?

Mr. LATHAM. No, sir. You misunderstood. We are going to operate the submarines in a different mode which means that in peacetime we significantly complicate the Soviet ASW forces. It probably has them spending billions of dollars for a $250 million investment.

Senator LEVIN. Do you agree it is worth $250, but not $500 million?

Mr. LATHAM. No; I don't agree with that. It might be worth more.

Senator LEVIN. Well, you disagree with the CNO? Could I have that chart put on there again with the 17 items, your priorities?

Mr. LATHAM. Yes, sir.

Senator LEVIN. ELF is not even on the list.

Mr. LATHAM. No, sir. Those are the items that the Senate Armed Services Committee suggested adding on top of what already was in the President's budget.

Senator LEVIN. OK, that is our suggestion. Is that what you are saying?

Senator WARNER. That's right.

Senator LEVIN. OK, in any event you agree with the CNO that it's worth $250 but not $500 million?

Mr. LATHAM. No; I didn't say that.

Senator **Levin**. Then I misstated you. You do not agree with the CNO?

Mr. **Latham**. I agree with the CNO that it is worth at least $250 but it might be worth even more.

Senator **Levin**. But you do not agree it is worth $500 million, which is what the CNO said in March?

Mr. **Latham**. I am going to go back and say what I said in the strategic concept. We weighted off spending more than $250 in the total package and agreed that at this level it was an acceptable expenditure.

Senator **Levin**. And not the $500 million level?

Mr. **Latham**. Not at $500 million in that sense.

Senator **Levin**. Thank you. Well, that's the sense I'm asking the question. I think it says something about the importance of this.

Senator **Warner**. We have omitted reference to conventional warfare which stresses the survivability under the nuclear scenario. My recollection, having worked with this, as I said, for a long time, is that we have put considerable emphasis on the conventional value of this system, during conventional operations.

For example, the very thing that we witnessed with the Soviet submarine the other day, that Whiskey on the rocks. [Laughter.]

Mr. **Latham**. I think they have a hangover from it too, Mr. Chairman. [Laughter.]

Senator **Warner**. Well, we obviously have some covert activities on our submarines during any conventional period, during periods of peace. Does not this system enhance that operational capability, Admiral?

Admiral **Nagler**. Yes, sir. Before Mr. Latham spoke I was going to say two things. To take your question directly, Senator, I was going to quote from Admiral Hayward on April 6, 1981, when Senator Stennis asked the question on survivability. Admiral Hayward said the proposed ELF communications system would not survive a direct nuclear attack.

Senator **Levin**. It won't survive a pair of pliers, for God's sake, in the Michigan wilderness.

Admiral **Nagler**. However, it would be particularly useful——

Senator **Levin**. In a nuclear attack you have 50 miles of forest up there that is unprotected. You are not going to patrol the darn things. All it takes is a shot. You know, I have seen the wire. I have it on my desk. It takes a big pair of snippers, I know, not pliers. It is this thick [indicating]. It takes a big pair of snippers. All you have to do is climb a pole and cut the darn thing. It is not going to be patrolled.

Admiral **Nagler**. I have faith in the Michigan people.

Senator **Levin**. So do I.

Admiral **Nagler**. Since most of them in the last survey were backing it.

Senator **Levin**. I have a lot of faith in the Michigan people too. Well, surely you don't go by surveys.

Admiral **Nagler**. Oh, I am saying that is just the latest one I have seen, Senator.

Senator **Levin**. Because they voted against it in I don't know how many counties and that was an election.

Admiral **Nagler**. The latest one that I saw was for it, sir.

Senator **Levin**. At any rate, I just want us to know this. We are not talking about a nuclear bomb hitting some wires. We are talking about a shotgun and a pair of snippers, folks.

Admiral NAGLER. May I continue, Senator?

Senator LEVIN. Oh, yes, sure. I am taking too much time from the chairman anyway.

Admiral NAGLER. It would be particularly useful in conventional warfare, during crisis throughout the spectrum of limited nuclear options and nuclear and nonnuclear war at sea. So to answer your question, Senator, the CNO personally considers that it is useful and while it is not survivable it is very useful for other scenarios.

If I may also, Senator Levin, I understood you to say that the Navy has repeatedly—and maybe I heard this wrong, sir—that the Navy has repeatedly said we do not require ELF until the 1990's.

Senator LEVIN. At least.

Admiral NAGLER. Because there is not an ASW breakthrough. As I recall the Navy's statements throughout this, they are that we required ELF but that we did not see a Russian ASW breakthrough before the 1990's. I don't think we said we did not need ELF. It was that we did not see an ASW breakthrough.

Senator LEVIN. That's true. In March you said you don't need it if it costs $500 million, but you do if it costs $250 million.

Admiral NAGLER. Again, I can only repeat that it should be put into the proper context.

Senator LEVIN. Thank you.

Senator WARNER. Let us go on. I would like to put into the record at this point the communications from the Chief of Naval Operations dated February 28, 1981, which I'm sure the Senator has a copy of. We will be glad to give the Senator a copy of that.

[The information follows:]

STRATEGIC COMMAND, CONTROL AND COMMUNICATIONS

The Chief of Naval Operations letter to Senator Humphrey of February 28, 1981, is provided:

CHIEF OF NAVAL OPERATIONS,
February 28, 1981.

Hon. GORDON J. HUMPHREY,
Chairman, Preparedness Subcommittee, Committee on Armed Services, U.S. Senate, Washington, D.C.

DEAR SENATOR HUMPHREY, Thank you for your letter of 28 January 1981 concerning the Navy's ELF communications program.

In November of last year, I reaffirmed to the Secretary of Defense the Navy's requirement for ELF and my belief that the recommendation made to the President two years ago remains the most feasible way to proceed with ELF.

In my judgment, the most important deficiency that needs to be corrected in the Navy's strategic posture, is the lack of a survivable link to insure delivery of emergency action messages to submarines at sea. A new and improved TACAMO aircraft is vital to correcting this deficiency. ELF is also essential in assuring communications to all submarines. In my view, we should pursue both programs. When I think of ELF, I think of the austere system (i.e., the 28 mile facility at the Wisconsin Test Site and the programed 130 miles at Sawyer AFB in Michigan.)

Sincerely,

T. B. HAYWARD,
Admiral, U.S. Navy.

Senator WARNER. We will now proceed to closed session.

[Whereupon at 3:38 p.m. the subcommittee proceeded in executive session.]

EXECUTIVE SESSION

Senator WARNER. We are now prepared to resume in executive session.

STATEMENT OF DONALD C. LATHAM, DEPUTY UNDER SECRETARY OF DEFENSE (COMMUNICATIONS, COMMAND, CONTROL AND INTELLIGENCE)

Mr. LATHAM. Sir, if I may, I would like to show you, in a programmatic context, how we are trying to implement the strategic command and control system. So I will speak on this subject area this afternoon, sir.

This will give you a top-down view of where our guidance is. I will show you where we are trying to go in terms of goals, how we see some of the problems and challenges in this area which are significant, and introduce to you the concept of the C^{3}I Triad. I then would like to talk to you about a framework for an enduring C^{3}I capability. I am not going to tell you that the architecture is all in place today. In fact, I will hit on that point as the last item. There are some unresolved issues and we don't have all the answers yet.

I would like to show you the resources summary and then give you the essence of the program and will show you where we still have some work to do.

FISCAL YEAR 1983—87 DEFENSE GUIDANCE: C^{3}I NUCLEAR WAR SPECIFIC

Support preplanned adaptive employment plans: in response to particular situations; to control escalation.

Maintain capability for trans- and pos attack execution: [Deleted].

Same priorities as the weapons systems it supports: [Deleted].

The handbook we use, if I could call it that, our design handbook, is the Defense Guidance. This shows you the C^{3}I summary pieces out of that. I think two things are important.

We want to be able to work in a trans- and post-attack time frame [deleted]. So the thrust of where we're trying to go that perhaps is somewhat different than before is this enduring case to support the protracted war scenario.

STRATEGIC FORCES MODERNIZATION PROGRAM, NATIONAL SECURITY DECISION DIRECTIVE 12, OCTOBER 1, 1981

STRATEGIC COMMUNICATIONS

This is the highest priority element in the program. It would develop command and communications systems. For our strategic forces that can survive and endure before, during, and after a nuclear attack.

Now the importance of the program has been officially documented, if I could call it that, in this brand new National Security Decisions Directive No. 12 which just came out on October 1, addressing the total strategic forces program. This is the quote that in terms of the five elements of the program, the C^3 part of this is "the highest priority element in the program." So we do have some visibility all the way into the National Security Council. It is an important program and has support.

PRIORITY OF STRATEGIC C^3

> I can't think of any higher priority than improving the C^3 aspects of this whole program.—Secretary of Defense Caspar Weinberger, testimony to HAC, October 5, 1981.

In addition, the Secretary, when asked about the importance of the program just on October 5, made this statement on the priorities that he saw in the strategic programs (indicating).

Let me talk quickly about what we are trying to do and our philosophy and goals.

STRATEGIC C^3I PHILOSOPHY AND GOALS

Evolve an enduring architecture: a continuing process.
Strategic air defense: a linchpin in the architecture.
[Deleted].
Forces and C^3I must evolve as a unified system.
Provide for leadership survival—include civil defense.
Develop an improved C^3I acquisition process.

This is a philosophy and goal summary of where we are trying to get to, what is the thrust behind all of this. First of all, we are trying to get to this enduring architecture. That is a continuous process. As I am sure you are aware, sir, the technology changes, the threat changes, new things come on board, so on any given day one can get up and describe where we are and a year from now we'll say there are some new things that we think we ought to have.

For example, today we will talk about this [deleted]. The technology is here for an EHF satellite. That is part of this evolving architecture, so we are trying to move toward that. We will point out, as Dr. Wade mentioned in the opening statement, that strategic air defense is a linchpin in this program. [Deleted.]

[Deleted.] So knowing how to cope with that is very critical.

We must evolve this thing as a unified system. That is, the programs that Mr. Jones has described for you in terms of forces and what I will describe as Mr. C^3I. We have to work that as a team effort and as a unified system thrust. That is the only way to evolve it.

We are working diligently on one of the most difficult problems which is providing for leadership's survival from the NCA all the way down to the battle staffs and the force management structure. So part of the program would include some aspects of civil defense as well as means to survive the NCA in some unique ways.

Then, in terms of the challenge to the USDRE we seek to improve the acquisition process and that is part of our long-term goal as well. This involves not buying C^3I things like we buy airplanes. It involves buying a much more complex system. It involves complex procedures and people involved. So it is a very difficult thing to do.

STRATEGIC C^3I REQUIREMENTS

Balanced capabilities—peace through protracted nuclear war.
Enduring survival: via reconstruction; redundancy; design.
Assures NCA connectivity to: forces; civil structure.
Of equal priority as strategic forces it supports.
Satisfy several Presidential directives.

Mr. LATHAM. The requirements that we are working to from a top-down point of view are these. We are going to try to build a system that is equally balanced between peace through the protracted nuclear war, so that as the Soviets view this—and I will talk to that in just a minute—it is not a system that has an obvious weak point and can be taken apart in some sort of simple case.

Enduring survival with these kinds of capabilities shown here, I will talk to reconstitution more as we go through this. It insures NCA connectivity. It is a difficult job, if you construct scenarios for the so-called out-of-the-blue cases. But importantly, a very critical aspect of how you wire up the system, equal priority to the forces and also we have to satisfy several other Presidential directives. Those are the kind of top-down requirements to which we are working.

Desired Soviet Perceptives of U.S. C^3I

A "balanced" system across the spectrum from peacetime deterrence to strategic nuclear war: capability; endurance/survivability.

Difficult to totally destroy.

Secure (COMSEC).

Reconstitutable.

Allows for capability to communicate with them: crisis management; negotiation.

[Deleted.]

To make a point about how we would like the Soviets to view this, we want them to look at our C^3I system as balanced and survivable. So, across the spectrum, he will have no way, hopefully, of being able to take it out easily. We believe that is a very important aspect of the enduring case and a very important part of the deterrence in general that he have this perception.

It should be difficult to destroy and very secure. It should be reconstitutable. We will come back to the question on PAVE PAWS and being able to reconstitute that attack warning and assessment situation in some manner, [deleted] capability. We should be able to communicate with them and, as I mentioned, it is important that we have an enduring [deleted]. It is better today. We have a much, much better system than theirs.

The point is, in a protracted case, can we reconstitute enough of this I system so that we are still better? That is a major challenge.

The Strategic C^3I Problems and Challenges Today

[Deleted]: major problems.

The challenge—Designing an enduring C^3I system: to match policy; with endurance; with equal priority to the weapons it supports.

As I would see the problem today, as shown here, it is this: [Deleted.]

So the challenge that we have, then, is to design this enduring case to match the policy with the endurance of the forces it is trying to support and with the same sort of priorities, and so we don't fall on our sword again and not have the system, 2, 3, 4, or 5 years from now, have somebody stand up and say, where is it when we spent a lot of money?

A Way to View C^3I

The C^3I Triad—

1. Warning and attack assessment.
2. The command function.
3. Supporting communications.

Let me talk to the so-called C^3I Triad. This is my term. It makes it conceptually easier to understand the system. I would like to break it down into these three pieces—warning and attack assessment. That involves things like PAVE PAWS, and so on being used—the command function—that is (NEACP), the airborne command post, mobile command capability and then supporting communications of all varieties, such as EHF satellites and things of that nature.

So if you kind of take a look at it in that way it is possible to get a better conceptual picture on this.

BALANCED AVAILABILITY OF STRATEGIC C³ FUNCTIONS

PEACE TO WAR

Tactical warning: unambiguous; attack characterization.

Decisionmaking: force survival; offensive response; conferencing.

Communications: NCA to force commanders; force commanders to forces; report back of results to decisionmakers.

Again the balanced availability of these functions is required. In the tactical warning phase, to your point, Senator, unambiguous warning is very critical. The problem—and we are in closed session—[deleted] so there's some rationale behind why you would like to have this PAVE PAWS coverage.

It gives him more difficulties also in how he would [deleted].

In the decisionmaking case, force survival and the offense response, we must be able to provide the conferencing between the NCA and force commanders.

In the communications area, as we note here, from the NCA to the forces and back so that there is a report-back problem. It is not a simple one-way, send a message one time and we never talk again thing.

[Vugraph deleted.]

Mr. LATHAM. This vugraph is very sensitive. We did the strategic connectivity review which Dr. Wade chaired. These are the major conclusions that we came to in this review. This is what is driving these programs.

[Deleted.]

Senator WARNER. I think we are pretty well aware of that.

I think Senators recognize that that situation is present. Otherwise we wouldn't be going forward with the momentum that we are. I am not criticizing you, sir. I am glad that you confirm my thoughts.

Mr. LATHAM. We believe there are some organizational and coordination things that we should do, and that's a part of the problem, so when I answered making people believe we have a problem, we really have some problems.

ENDURING STRATEGIC FORCES AND THEIR MANAGEMENT

The linchpins are: enduring C^3 and I; enduring North American air defenses.

Now the linchpins that I want to reemphasize in putting this whole force structure together in the C^3, the I, and this North American air defense, working that as a unified system problem. And that's the way we're trying to do that.

A VIEW TOWARD ENDURING C³I SYSTEMS

Fixed sensor C^3 and command C^3 centers are too vulnerable.

Reconstitution must be designed into the architecture.

War and peacetime capabilities differ—no need to reconstitute it all.

View the problem as a two-system concept.

Surviving battle staffs and intelligence personnel critical.

Must exercise in peacetime: regularly.
A major factor is deterrence.

You can approach the construct of an enduring system from several different ways. We don't believe that fixed sensor sites and fixed command and control sites are very survivable. This goes back to the question about what is survivable. You must have this reconstitution designed in the architecture. Not everything, but some capability.

There is a difference between a war and a peacetime capability. You simply don't have to have it all. What I would like to do, and I will show you, is to view this as perhaps a two-system concept and I will define that in just a minute.

Surviving people is as important as surviving assets. If we don't have any battle staffs and intelligence specialists to be able to prosecute the war then that is not going to help very much. So providing for the personnel to man these things and surviving them is important. Somehow we must convince people from the NCA on down that this thing must be exercised regularly. Again, that can be used by the Soviet as a very important aspect to deterrence. And [deleted].

A TWO-SYSTEM VIEW TOWARD ENDURING C³I

LEVELS OF CONFLICT

System I

- Day-to-day peacetime.
- Crisis: Level 1—interested observer; level 2—movement/alerting of forces.
- Conventional warfare.

System II

- Nuclear warfare—theater/at sea; strategic:
  - The protracted war:
    - initial exchange;
    - crisis periods;
    - conventional phase;
    - additional exchanges.

A view toward this enduring system is shown here. You can talk about a system 1, which has the following capabilities. It will handle adequately your day-to-day peacetime. It will handle your crisis cases such as an interested observer. We are certainly watching what is going on [deleted].

In the Cuban missile crisis we moved forces and alerted forces and so on, and also it works in conventional warfare. So we have a system that adequately handles that.

This is to say that CONUS is a sanctuary. We haven't had PAVE PAWS or anything else attacked.

Then we would have what I call system 2. It is a system that is designed to handle the protracted war case—everything from theater or at-sea nuclear war to the strategic case through multiple exchanges. So let me go on then and try to describe how we might do that.

A C³I ARCHITECTURE APPROACH

- View the construct toward enduring C³I as a two-system problem:
  - System I—peacetime/crisis/conventional war.
  - System II—strategic and theater nuclear war.
- Focus system I architecture on:
  - Strategic warning;
  - Tactical warning;
  - Attack assessment;

- Crisis management;
- Support of conventional war operations;
- Peacetime support.

Focus system II architecture on:
- Reconstruction [deleted];
- Capability to endure [deleted];
- Performing [deleted];
- Embedding some elements in system I;
- Mobile C^3.

The situation would look something as follows: Viewed as a two-system construct here with these systems I defined and then focus the system 1 architecture on the following missions or functions, do a good job of strategic warning and tactical warning, do a good job on attack assessment and crisis management, and support of conventional war and peacetime. Make sure you have that capability well in hand.

Then, in the system 2 case, design it such that you have the capability for reconstitution [deleted].

In other words, we will reconstitute [deleted] of this [indicating]. We will actually embed in system 1—I will describe that in a minute—some parts of system 2, so that they are there in peacetime doing these functions and hopefully will survive and do the function in wartime while some elements would have to be reconstituted.

It provides, then, for these kinds of functions in system 2.

FORMING AN ENDURING C^3I SYSTEM: AN EXAMPLE

SUBSYSTEM ROLES (WHICH SUPPORT)

System I initiatives	Peacetime functions	Crisis	Conventional war	Embedded portion of System II
Defensewide C^3:				
Subsystem A	×	×	×*	
Subsystem B	×	×	×*	
Subsystem C	×	×	×	×
ELF	×	×	×	×
Cincsac ABCP	×	×		×
VLF on bombers				×
Terrestrial LF				×
Mobile [deleted] terminals				×
Mobile command capability				×

* Conus only.

Let me give you some examples. This is just a limited list. When it gets to the ELF portion, I must say I am sorry Senator Levin left.

Senator WARNER. Oh, I believe he made his point. [Laughter.]

Mr. LATHAM. But I wanted to come back to it.

All right, in defensewide C^3 I listed some subsystems. Subsystem A could be WMMCCS. WMMCCS plays a very important peacetime crisis and conventional war role and does nuclear planning but doesn't have a function in terms of executing the force. Subsystem C, it turns out, is DSCS, the DSCS communications satellite. And here is your ELF. As we mentioned in the open hearing it plays a peacetime function, a crisis function and, as you noted, sir, a conventional war function.

Now if you put the flipdown, what I am indicating over here is the embedded portion of system 2. What is actually in here are things like this. We would have ELF. We would put LF/VLF receivers on the bombers. That is a function that we don't need in peacetime crisis or conventional war necessarily, but it certainly plays a role in our system 2 case, so it is embedded there, being able to be used in peacetime if necessary. It is certainly there if a war starts.

So one could make a list of initiatives such as this so that you can describe where the pieces start to fit together.

FORMING AN ENDURING C^{3}I SYSTEM: AN EXAMPLE

SUBSYSTEM ROLES (WHICH SUPPORT THESE PERIODS/FUNCTIONS)

System II initiatives	Initial nuclear strike	Crisis period or conventional phase	Restrikes
Terrestrial LF comm system	EAM broadcast	Backbone comms	Multinode survivability.
Mobile command capability	EAM decision survive NCA	Deterrent	Survivability.
Tacamo	Alerting; EAM dissem	Critical node in sub comms	Survivable EAM dissem; general comms support.
IONDS/GPS	Navigation; damage assess; retargeting	Navigation	Navigation; retargeting; damage assess.
EHF Comsat	TW dissem; EAM dissem	NCA support (deleted)	Survivable comms; EAM dissem; NCA support.

Now if you take another look at it in terms of subsystem functions, this is an example here. We are going to go ahead with a terrestrial LF communications system, [deleted] nodes, so that nuclear effects and attacks on this system would be very, very difficult to take it out. In fact, the estimate is it would take at least [deleted] warheads to take it out.

What does it do? EAM broadcast, backbone communications in crisis or conventional phase, and in the restrike case it provides multinode survivability. One then can go on to a number of system 2 initiatives such as this and try to describe to you, sir, the framework of how these various systems come together. For example, IONDS/GPS. We have had a lot of discussion on that in the conference. It's very important from the IONDS point of view because it does strike assessment and allows us intelligently to do restrikes in the SIOP case. It plays a very important role in the strategic case.

Senator WARNER. Are you giving along the way probable dates on IOC for some of these systems?

Mr. LATHAM. I can do that for you, sir.

Senator WARNER. Why don't you just put them in the record?

Mr. LATHAM. I will be glad to do that, yes, sir.

[The information follows:]

The proliferated low-frequency ground-wave radio network will provide an enduring terrestrial backbone for command and control, and is planned to achieve IOC [deleted]. The TACAMO aircraft for communications relay to the submarine force are already operational, but to achieve significant improvements in the system, we are planning to replace the aging EC-130's with more capable airframes, [deleted] IOC for the MILSTAR EHF satellite communications relay is currently planned for [deleted].

The Integrated Operational NUDETS Detection System (IONDS) program is linked to deployment of the NAVSTAR Global Positioning System (GPS), which provides the host spacecraft. We are planning to achieve an eighteen-satellite GPS constellation [deleted].

The Mobile Command Centers initiative is structured to achieve IOC [deleted].

Senator WARNER. Depending on my colleague from Indiana, his availability, I will have to absent myself at 4:20.

Senator QUAYLE. I have to go before then.

Mr. LATHAM. I will be through in another 10 minutes.

Senator WARNER. We will then defer to majority and minority counsel to continue the questioning.

Mr. LATHAM. You alluded to why we had problems with C^3I and getting it on-line. Well, as you can see from your experience in this area, it is on a joint system in many ways—many, many joint programs—and that makes it difficult to manage and fence the funds. Many people view the system as parts. A lot of things don't cost very much when you break it down in C^3I and then when you add it up it is a big number, but it is looked at as a parts list in any case.

UNIQUE ISSUES WITH C^3I PROGRAMS

Joint operations yield many joint programs.
Many "small" dollar items procured as "parts".
NATO heavy involvement.
Driving need for interoperability and standards.
Acquisition of C^3 systems—especially strategic—not easy.
System classification/security.
Fact that C^3 is (or should be) "command personality" sensitive.

In the case of the theater nuclear C^3 area, for example, there is heavy NATO involvement. They get a vote in how things go. In the standards area the acquisition is not easy. There is a classification problem and importantly in designing the system we must understand the commander's personality and how that system would be used in his area, from the NCA on down.

So those are some differences, which makes it more difficult than buying cars or airplanes.

STRATEGIC C^3 RESOURCE SUMMARY

[Fiscal years; in millions of dollars]

Appropriation	1982	1983	1983-87
R.D.T. & E	[Deleted.]		
Procurement			
Military construction			
Total TOA			

Let me show you the resource chart very quickly. These are dollars in fiscal year 1982 and then in the fiscal year 1983 program. It is about [deleted] billion, and then the total for 1983–87 is about [deleted] billion. It is broken down as shown here. You heard the number [deleted] billion used, and that is in fiscal year 1982 dollars for the program from fiscal year 1982 through fiscal year 1987. This is in fiscal year or FYDP dollars as shown here.

TACTICAL WARNING/ATTACK ASSESSMENT

[Fiscal years; in millions of dollars]

Major programs	1982	1983	1983-87
[Deleted]	[Deleted.]		
Conus radio network			
Pave Paws			
BMEWS			
Advanced warning system			
Conus OTH–B			
Spacetrack			
DEW radars			
Strat. comm and alerting system			

Mr. LATHAM. Now let me give you some idea of what are the new initiatives. I have broken this down into the three parts of the C^{3}I Triad with tactical warning and attack assessment first. Here is your [deleted]. Here is your PAVE PAWS, and shown in the red or orange here are additions to the program that we put in as part of the strategic connectivity review, either adding a new program that wasn't there before, such as this Conus radio network, or adding additional dollars to bring it on-line faster.

We will provide you the IOC dates on this.

STRATEGIC DECISIONMAKING

[Fiscal years; in millions of dollars]

Major programs	1982	1983	1983–87
PACCS/E-4B	[Deleted.]		
GMCC			
[Deleted]			
Navstar GPS			
IONDS			
Surv. and enduring Satcom			
Post attack RECCE			

In the decisionmaking area here are some of the initiatives. For example, one of the major new initiatives is a ground mobile command center capability. That is a system of vans and communications associated with those that would be deployed in Conus for highly survivable command centers for battle staff, NCA, and senior military.

Here is your NAVSTAR GPS again and the IONDS portion. This surviving and ending SATCOM is a planning wedge for a very ultra-survivable, reconstitutable, low altitude satellite which will complement [deleted] if needed. We are in the process of ascertaining whether or not that is in fact what we should do.

STRATEGIC COMMUNICATIONS

[Fiscal years; in millions of dollars]

Major programs	1982	1983	1983–87
MEECN	[Deleted.]		
SAC communications			
Gryphon			
ELF			
FBM control system/Tacamo			
[Deleted] Afsatocom			
SDS			
Enduring sat. control cap			

In the communications area again there are a number of additions and new things, as shown here. MEECN, you have all supported very heavily. We have added significant dollars there. ELF we have talked about. Here is your new TACAMO system, the ECX and here is the [deleted] AFSATCOM, the EHF satellite that we would like to have on line [deleted]. We have provided enough money, we believe, in 1982 and 1983 to get on with that.

STRATEGIC COMMUNICATIONS

[Fiscal years; in millions of dollars]

Related major programs	1982	1983	1983-87
Fltsatcom	[Deleted.]		
DSCS			
Advanced space comm			
Satcom ground environment			

Here are a few more in the communications area. Here is the FLT SATCOM. Here is the DSCS program and a couple of other base communications-related things in which this is some advanced work on the more survivable space communications work. There is a heavy emphasis on surviving space communication-type systems.

STRATEGIC FORCES MODERNIZATION PROGRAM

SURVIVABILITY IS OF THE ESSENCE

Reduces incentives for first strike and surprise attack.
Limits conflict to lower intensity.
Facilitates overall reductions in strategic arms.
Redresses imbalances at less cost.
Long term survivability (endurance and reconstitution) mandatory.
Rethinking of operations and logistics necessary.

In summary, the strategic forces modernization programs are summarized here. The essence is survivability. We want to reduce the incentives for this first surprise attack and first strike. We want to limit the conflict, to a lower intensity which can in fact be done if we have a good C^{3}I system and the forces that can endure with it.

We want to redress these imbalances at a lower cost, do it smart and not just try to match one-for-one in forces. The long-term survivability and endurance are our goals, and a part of this is the rethinking of operations and logistics support bases necessary to do that.

UNRESOLVED ISSUES—C^{3}I

How to acquire, given an architecture.
The enduring architecture definition.
[Deleted.]
Convincing people the problem is real.

Are there some unresolved issues? Yes. We don't have all the answers today. How to acquire, given an architecture, we need to learn how to do better. We need to get the enduring architecture definition firmed up so that we can say, "Yes, this is exactly how we are going to spend the money for the next several years."

How to deal with this [deleted] problem? [Deleted.] That is very important to us.

And then we have to convince people the problem is real.

Senator WARNER. That is another good report.

I know that counsel and I and the members of this committee have a general familiarity with this and with the parts. Do the other witnesses care to add anything to that presentation?

[No response.]

Senator **Warner**. I will now defer to my counsel for any added questions we have for the panel.

Mr. **Lehman**. Dr. Wade, Mr. Latham, I think the first question we would like to ask you is this: This administration has given a great deal of emphasis and high priority to C^3I. As we look at a lot of these programs, many of them have been in the POM for some time. Some of them are new.

In your own view, what are the most innovative aspects of your program?

Dr. **Wade**. In my view, Mr. Lehman, the most innovative element is the approach we have taken in putting the C^3 package together. That is, we have assessed the delivery systems together with C^3 to make sure that C^3 has equal priority in reference to the viability of the total system. In order to get this job done, now that we have a program defined and moneys requested, we are planning on reporting to the Secretary personally about once a month; this will make sure that his interest is there and when we run into problems, whether bureaucratic or otherwise, that we have an additional impetus behind us so that we don't fall into the same trap that we have over the last 10 years.

I think it is a question of seizing the senior leadership to the problem, and thus making sure it gets done. I think that is new.

Mr. **Lehman**. Would you provide for the record a list of those C^3 initiatives that are in your POM, in your 5-year plan, which were not previously in the 5-year plan, and for those that were previously in the 5-year plan, and again this is for the record, would you provide an indication of how much enhancement, either in dollars or in accelerated initial operational capability, you have provided?

Dr. **Wade**. Certainly.

[The information follows:]

Major Programs

The following table identifies the major programs within each of the areas: Tactical Warning; Strategic Decisionmaking and Communications. The columnar entries indicate: prior inclusion in POM five-year planning (where planning was primarily R&D, only this is indicated as "R&D"); new OSD changes to the POM; and in the third column, the increase over the period fiscal year 1983-87.

[Fiscal years; dollar amounts in millions]

Major programs	POM item	OSD change	1983-87 Delta
Tactical warning/attack assessment	[Deleted]		
Strategic decisionmaking			
Strategic communications			

Mr. **Lehman**. Could we go back to one of your charts? Mr. Latham, this was your chart on unresolved issues.

The second item, the enduring architecture definition you have indicated in your testimony the importance of having an architecture which can provide enduring survivable C^3I. You have described to us a program that I believe adds on the order of $6.7 billion, is that correct, over the 5 years for C^3. How much of that $6.7 billion is involved in those programs for the architecture that is not defined?

That is to say, how much of the $6.7 billion is specific programs for which there is a specific funding profile and how much of the $6.7 billion is somewhat undefined?

Mr. Latham. The one major undefined element that I referred to as I was running through the resource summary is what to do about the survivable satellite area. There is [deleted] in the 1983 to 1987 timeframe for that initiative.

We are wrestling with whether or not to go ahead with that particular segment and/or whether we can [deleted] as survivable as we would like to have it against all forms of attack. So that is a planning wedge in the sense of do we go ahead or not with another reconstitutable, in that case, [deleted] concept. That is the one major wedge in the plan and the rest of it is reasonably firm.

There are some details that we are still wrestling with. Do you need five of these or do you need eight of those? Do you need 10 of these and 6 of those? Those kinds of questions are still being looked at very carefully. So it is not a question of do we need that particular subsystem of the C^{3}I system. It is how many.

It gets to be a question of how survivable and how many aim points would he have and how much money is there.

Admiral Nagler. May I add to that?

Mr. Lehman. Yes, sir.

Admiral Nagler. There are two things that come to mind. It is very hard to go back through that massive program, but the enduring qualities of ELF, for example, how can we make that transportable in order to have it survive an initial attack is another thing that hasn't been defined yet, but we have money set aside if the 1982 budget comes through.

How much EMP hardening do you have to do is another thing that we have set aside money to take a hard look at. Is [deleted] volts per meter, for example, the right answer for EMP hardening and how much has to be done there?

The other thing that we are looking at, and I am sure Dr. Wade and Mr. Latham can go on and on, is command center survivability. That has been studied since the days I was an ensign. Where do you cut off, how much and how hard do you want to make that? So there are many, many things where if all the money comes through we have to look at [deleted].

So there are many, many more things.

Mr. Latham. Yes. I was naming a big ticket item.

Admiral Nagler. I would like to add to Mr. Lehman's question on innovation, which you did not address to me, sir, but having unfortunately no longer been a seagoing officer in 11 out of the last 19 years, having been in Washington, the biggest innovation that I have seen this last year is the fact that the Secretary of Defense appointed Dr. Wade to look at strategic connectivity as a whole across the Army, Navy, and Air Force and Department of Defense and the agencies. That never has been done before.

The fact that Dr. Wade had all of us on an executive committee where we could speak up and object, agree or disagree as we saw fit, was the biggest innovation I personally have seen in the Department of Defense for a long time. For the first time this was addressed as a total system across all of the services. That is what I would claim to be the biggest innovation.

Mr. Lehman. We would like to think that was an innovation over here in the Congress, too.

Admiral **Nager**. Then we will give you credit. I thought the Secretary of Defense did it.

Mr. **Lehman**. If all credit were given where all credit is due that would be a good thing.

General **Dickinson**. May I comment in that area?

Mr. **Lehman**. Yes, sir.

General **Dickinson**. I think in the same light it is really very rewarding to those of us who are working this to see additional groups taking the system approach. It is a system that has to be put together and it has to have some constancy over a period of years in terms of support.

I think you will find that there is no lack of definition of the architecture, particularly on the funds for the 1982 through 1984 period. The first priority mentioned by Mr. Latham, was to [deleted]. That is the first step of establishing a really confident deterrence and is the first priority effort.

Then we have a tougher problem as we talk about longer and longer endurance. That comes in various stages, as you talk from days into months. We have been able now, I think, to shift gears from convincing people that we have a problem, and we appreciate your support in this committee particularly in that respect. Now we have to execute.

Mr. **Lehman**. Let me state that it has been the policy of the chairman of this subcommittee that all of the witnesses are encouraged to address all of the questions whenever they have something that should be on the record and that we should know about.

George?

Mr. **Riedel**. I was wondering if that new organization will carry out to the point of actually executing the plan. It is one thing to create a committee to study it. It is quite another thing to carry it out when you get down into fighting for the budget dollars and things. What changes are planned in the organization of the agencies and the various services dealing with C^3 to actually execute this?

Dr. **Wade**. I think there are two points to your question. No. 1 is that we have made the decision to continue the executive board and the task force approach in the context of further defining architecture and what the systems characteristics specifically should be.

Second, as part of the continuing DOD-wide approach, we intend to watch over the programs that have been funded and supported and make sure that they are fully put out into the field. We intend to report to the Secretary of Defense and get his support where we succeed and where we don't to get his push to make sure we succeed. The point here is that the senior leadership of the Department has recognized the priority of the problem.

Now in reference to organization, we have changed our internal organization within R. & E. in terms of integrating C^3 with weapons systems. We still are reviewing, I think, what you are alluding to and that is whether the outside organization is ready and there to do the job. I am concerned about that one problem now. We have been reviewing it and we hope to improve upon that aspect in the near future.

Admiral **Nagler**. I would add to that, please. Within the Navy quite a few years ago—well, not too many years ago—3, 4, perhaps 5—we recognized this problem. My job today as director of C^3 for the Navy ties together communications, ADP command and control, satellites, electronic warfare, counter-C^3, et cetera. I have six admirals working for me all in that field. They report directly to me and I report directly to the CNO, so the CNO, who is strongly behind C^3, and Admiral Hayward has testified to that effect before this committee, has brought together under one head all aspects of C^3 from a management standpoint.

Mr. Lehman. Dr. Wade, you have stressed the importance of considering C^{3}I together with your force structure and your weapons development programs. Could we return to that chart again on unresolved questions?

Mr. Lehman. An important part of the President's strategic package is air defense and you have briefed today that with respect to the overall force effectiveness and with respect to C^{3}I air defense plays an important role. Let me ask you this. You state here that one of the unresolved issues concerns the [deleted]. Part of that, I assume, has to do with [deleted] assets. Part of that, I assume, has to do with aircraft. Can you give the committee an idea of how much of the President's air defense emphasis is driven by your concern over Soviet ability [deleted].

Dr. Wade. In the strategic package there was a higher priority addressing the strategic defense problem. For example, we were concerned as to the current [deleted] in that program and that needs to be changed and we do intend to change that feature over the future.

For example, let me discuss one feature of our ICBM program. As we continue the R. & D. program associated with defense of ICBM's, [deleted].

So you multiply force effectiveness in the sense of enduring survivability.

There are significant new aspects to this new program that will enhance the total deterrent posture and it is in this context that we have structured our air defense thinking in the sense of an enduring capability. Do you want to add to that, T. K?

Mr. Jones. Yes, I would add to Dr. Wade's comments. In the process of developing the integrated strategic force package my office and Mr. Latham's office in essence looked at a wide range of alternatives both of forces and C^3. [Deleted] were one of the major things that we traded in and out. We came inescapably to the conclusion that [deleted].

Every time that we took those elements out of the posture [deleted]. So we believe that the air defense matter and the other points that Dr. Wade mentioned are extremely crucial. They are also extremely difficult from a technical point of view to develop solutions that are on the one hand effective and on the other hand economical. And much of our current effort is going to working that part of the problem.

Mr. Lehman. Are you then saying that the [deleted] driving the sizing of the air defense program in the package?

Mr. Jones. [Deleted.]

Similarly, things that we might do to extend the endurance [deleted]. That particular element impinges on the effectiveness of all three legs of the Triad in the C^3 that we need to operate them.

Dr. Wade. I would like to close that point by making sure that it is understood in the right context. The [deleted].

So in the context of adding to deterrence air defense is important, but it is not the first priority piece of the package.

Senator **Warner.** Well, we want to get into this whole question of endurance. I am going to ask your respective staffs to work with the staff of this committee, the majority and minority staffs, to see what we can do to clarify some of the concerns that we have, basically in the area of endurance.

Dr. **Wade.** Yes, sir, we would be delighted to.

Senator **Warner.** Is there anything else that you have, gentlemen? George?

Mr. **Riedel.** No, sir.

Senator **Warner.** I must absent myself from this hearing. The hearing is in good hands with the combination of counsel that we have. I would thank the witnesses very, very much.

Dr. **Wade.** Thank you, sir.

Mr. **Gaffney.** Can you address for us, in as much detail as possible, what your estimation would be of the impact both from the navigation and positioning point of view and from the IONDS point of view, of the conference committee's action on NAVSTAR/GPS?

Mr. **Lantham.** The impact of the delay that would be incurred?

Mr. **Gaffney.** The impact as far as procurement is concerned: For instance, are there likely to be delays in the procurement of user equipment? How do you plan to act with regard to a reprograming action to make whole those accounts.

Mr. **Latham.** I think the best thing to do, Mr. Gaffney, would be to put that into the record. Clearly every year you slip is just another year that you are that much more vulnerable. We would prefer to see the system on-line much sooner. As has been adequately, I believe, stated and demonstrated, the cost savings because of charging the nondefense users and other efficiencies that can be gained by having the navigation portion, the GPS alone has tremendous cost benefits. And so we are losing that every year we delay the thing and with inflation and so on the system's going to cost more. So from a cost-benefit ratio we ought to get on with it.

But we could document that more for the record for you.

Mr. **Gaffney.** Fine.

[The information follows:]

NAVSTAR/GPS

We are still in the process of assessing in detail the impact of the Conference Committee's action on the overall GPS and IONDS programs. The denial of our request for fiscal year 1982 procurement funds will undoubtedly delay the start of procurement of the operational satellites. A year's delay in starting the operational satellite buy will, in turn, delay the establishment of the 18 satellite constellation and the initial operational capability of the system by one more year. This represents another year's delay in achieving the many force enhancements in virtually every aspect of our war-fighting capability that we expect to realize once GPS becomes operational. Our ability to detect and locate nuclear detonations worldwide with the full-up IONDS will also be delayed by a year. Aside from the military and intelligence gathering capabilities that are impacted by the committee action, there are other programmatic considerations that give us cause of concern. The year's delay will result in an additional delay before we can begin phasing out existing positioning and navigation systems and a year's delay before we can begin realizing the attendant cost savings. Finally, we are concerned over the signals this funding reduction and program slip will send to our allies. We have an on-going program to obtain NATO-wide adoption of GPS as a common, alliance positioning and navigation system. The benefits inherent in NATO-wide acceptance of GPS are significant. NATO confidence can only be shaken by what our allies will undoubtedly perceive as a unilateral U.S. decision to delay GPS' availability by a year.

The impacts of the R. & D. funding reductions are not completely clear yet. Without some reprogramming action, the Army is essentially out of the GPS program. Since there are many benefits in land warfare and other Army operations from GPS, we must maintain active Army participation in the program. Further, our atomic clock improvement program, so critical to long term enhanced strategic survivability, has been zeroed out by the Committee. The R. & D. reductions will necessitate the scaling back of our planned initial operational test and evaluation program for the various classes of user equipment. Finally, some adjustments in our on-going full scale development contracts may be required to accommodate the R. & D. funding reductions. The program office is currently assessing the options in an attempt to minimize the impacts of the program instabilities resulting from the funding reductions.

General DICKINSON. I would just add to the IONDS question, which is of the most concern for strategic C^{3}I survivability. Although both are very important, IONDS gives unambiguous warning to know where the [deleted] explosions have occurred. It is also one which has a very great value in later times because it allows you to have the [deleted] information [deleted].

Admiral NAGLER. Let me add to that too from a Navy viewpoint. As you know, the CNO when he was Acting Chairman strongly supported the need for Navstar and from a fleet standpoint, one of our most difficult problems is in AAW contacts with [deleted] of those ships and missiles. And we call that [deleted]. And Navstar gives us that and without that we will have [deleted] et cetera. So we think it's very, very important from a fleet standpoint to have that capability to locate all those forces, especially when [deleted] are in support of each other.

Mr. GAFFNEY. You all would agree then that NAVSTAR's availability at the earliest possible moment is an important priority?

Admiral NAGLER. From the Navy standpoint I agree, sir.

General DICKINSON. And I agree from the joint program's standpoint. We definitely agree.

Mr. RIEDEL. I would like to get a clarification on a subject that was discussed before. I am not sure I understood the answer.

Is the primary motivation for the modernization of the air defense the need to protect [deleted].

Mr. WADE. That is part of the need, but it is not the only requirement. There are matters associated with what I would call [deleted]. There is the need toward improved surveillance in the context of precrisis or peacetime conditions of endurance. As in C^3, I think in the context of air defense, one can make a similar statement of tradeoffs of additional weapons or defense.

Mr. RIEDEL. You would proceed or you would advocate this modernization of air defense without this concern [deleted]. Is that a correct conclusion?

Dr. WADE. It is in part correct but not sufficient by itself. Yes, sir.

Mr. JONES. I would add one fringe benefit that we get out of the air defense, it makes a substantial movement to [deleted].

So in essence, for something that I would justify primarily on other reasons, we get a very substantial improvement in the strategic balance.

Mr. Riedel. Maybe this is not the place to get into it, but how do the bombers constitute 80 to 90 percent of their power base? Is that what you said or did I misunderstand you?

Mr. Jones. No, that is not what I said.

In terms of the [deleted].

Mr. Riedel. I see.

Dr. Wade. The other point here is if you look at the resources that are allocated to this one element of the modernization package it is relatively small; but as you start "fresh" in modernizing and building upon those air defense systems, if you look toward the fact that your over-all posture is significantly enhanced by having endurance; and you start designing that feature in from the start, you can move in that direction relatively inexpensively rather than spend, for example, many billions of dollars for fixed assets, and then change downstream.

It is a question of how best to design and spend your money now for downstream applications. It is not an either/or operation.

Mr. Riedel. But what I hear is the majority of reasons associated with the modernization of air defense [deleted].

Dr. Wade. No, the point here is that what you need today is improved surveillance for peacetime and crisis control of CONUS. That costs you a certain amount of dollars. By spending your resources for providing the capacity for both near-term needs and potential downstream requirement foundations, you optimize your expenditures.

You also get this added feature of endurance and it is an important added feature. Now one could argue that you could double the amount of money allocated in our package to Air Defense in the context of doing what T. K. Jones is really suggesting here. We don't have that type of resources in the programs and therefore it did not reach the priority you suggested.

Mr. Jones. If my memory is correct, we propose to spend over the next 6 years [deleted] billion on bomber forces. [Deleted].

The effect of the air defenses on the balance of power is a second order of fringe benefit which is very attractive.

Mr. Riedel. I guess it has been difficult to think of ~~a~~ [deleted] when they have so many other ways of doing it so much quicker and efficiently.

Dr. Wade. I think that is right. One could note that if you didn't worry about that scenario at all and you just gave it a [deleted].

I think it is the second scenario that really is the most realistic option, in my personal judgment.

Mr. Jones. That is correct. The issue comes down not so much to the [deleted].

Mr. Riedel. This may be getting down to some of the details, but where are you on MOSAIC sensor work for satellites? As I understood the situation, when the previous administration made the decision to upgrade [deleted] and go to mobile ground terminal, we put the MOSAIC sensor quite a bit on the back burner. Do you intend to move it up front? Where are you on that?

Mr. Latham. That technology is progressing along. I don't know what year we are going to have it mature enough to say that is the [deleted] kind of system. But it is in the [deleted]. That would be about the time frame that I would guess.

It is coming along more rapidly than people expected that it would because they have learned how to make large MOSAIC arrays by using integrated circuit techniques now, where they were pretty much handcrafted before. So I think it will come along in the [deleted].

Mr. **Riedel.** Does your program accelerate what you found when you arrived or is it marching along pretty much at the same pace? How would you describe it?

Mr. **Latham.** At pretty much the same pace. That is in the DARPA area anyway. I am not sure, but I don't believe we have added any money to that, but I would have to check.

General **Dickinson.** That is correct, sir. There is only R. & D. money in this effort.

Mr. **Gaffney.** Let me get back to the [deleted] question because I think one of the things that impressed this committee quite a bit in previous testimony was the degree of unanimity that seemed to be expressed about both the need for [deleted] and apparently about the design of the system as well.

More recently there have been some indications floating around these halls that some of that unanimity has gone away or is no longer quite as widely adhered to as it was previously. Could anybody comment on where that program is and what you feel about it?

Dr. **Wade.** That is not true from our point of view.

Mr. **Latham.** It is actually better. Let me be specific. We have an EXCOM as it is called for MILSATCOM architecture. We held a meeting this past week and I proposed a revised [deleted] architecture. I believe that as a result of that meeting (and we sent around the minutes in a draft form) I received concurrence from all the services and the Joint Staff that that was a super way to go.

It simplifies the satellite. We will be glad to describe that to you. It in no way has any dissent in it. In fact, I would say—and these guys can speak for themselves—but I feel everybody is breathing somewhat of a sigh of relief because we deconflicted the satellite. That's my term. We made it simpler.

We look like we have taken some risk out of it and we have no disagreement whatsoever on the MILSTAR architecture.

General **Dickenson.** I would agree.

Mr. **Gaffney.** Surely in the entire community somebody has to have his nose out of joint because something that previously was making it more complex or "conflicted" no longer is part of the program.

Mr. **Latham.** No, sir. We have negotiated with the other agencies that were involved with that satellite system and everybody is happy. Certainly everybody would like to have more of this and more of that, but we in fact have an agreement on that.

Mr. **Gaffney.** General Dickinson?

General **Dickinson.** I would just second the perspective. I think there is better agreement right now than there ever has been.

Admiral **Nagler.** I would like to comment. When I came back a year ago I was personally shocked at [deleted]. In fact, the name among the services was FLTSAT. It was so big and so complicated that I was convinced that we could never get from here to there. It was just too complicated a satellite.

I think in the last several months more progress has been made than in the 9 months before that. I agree with Mr. Latham that everyone is in agreement that I know of right now.

The basic premise is we need EHF [deleted] and we're moving that direction and I know of no one in any service that is against the current architecture [deleted].

General DICKINSON. I would like to add just one other point and I think you are aware of it. We need EHF because that is the [deleted].

Mr. GAFFNEY. That is my next question.

General DICKINSON. It is absolutely vital.

Mr. GAFFNEY. As I understand it you are talking about an [deleted].

Mr. LATHAM. Yes.

Mr. GAFFNEY. That is in part made possible by the simplified approach then?

Mr. LATHAM. Yes, sir. We believe that by having reduced the number of users or people that we would accommodate on that spacecraft and by simplifying the amount of capacity on there significantly, to bring the satellite weight and complexity down, we have a higher degree of assurance that we probably could make [deleted] and talking to General Henry and General Randolph, who was here earlier, they believe we can do it. They have an acquisition strategy that necks down to the qualified contractors very rapidly, such that by next February we will be on our way with two teams and not six as we have now and be able to get IOC [deleted].

Mr. GAFFNEY. I have a couple of other questions that I think probably ought to be answered for the record. Just let me put them out to you.

In that connection would you explain how an interim EHF package on FLTSAT, which as I understand comes on line [deleted].

[The information follows:]

MILSTAR

If we can meet the 1987 IOC date for MILSTAR then the need for an EHF capability on FLTSAT is reduced or perhaps eliminated. It all hinges on our ability to meet this date. Due to earlier experiences on multi-service programs the Navy is understandably reluctant to totally depend on MILSTAR. I believe that if we can show substantial progress on MILSTAR during the next year then the need for an EHF package on FLTSAT can be eliminated.

Mr. GAFFNEY. I think we are also interested in getting from each of you in your respective capacities your feeling about the philosophy behind the apparent decision by the administration not to pursue attack assessment as a goal in and of itself. As I understand it you have decided that maybe that is something you can address as the C^3 modernization package matures and gets more fully developed and more fully funded.

We would like to know how each of you feel about that, what you are trading off, what you are sacrificing, what, in fact, you are saving by deferring that in terms of cost.

[The information follows:]

Dr. WADE. We need to distinguish between the degrees of attack assessment capabilities and when the information provided is needed. Our current sensors are capable of [deleted].

General DICKINSON. I totally agree with this administration's decision to put first priority on reliable peacetime operation of our C^3 systems, timely unambiguous warning of enemy attack, and assured delivery of the executive order to the forces [deleted].

General RANDOLPH. As stated earlier by Dr. Wade, the primary priority of the strategic C^3I program is to enhance the ability of the NCA to function, to assess an attack, and to enhance survival of our weapons systems under an initial attack. All of these capabilities infer that there is a need for what is termed attack assessment information [deleted].

Mr. Gaffney. Finally, as I think you know, Admiral, we had a provision in the Senate report on the fiscal year 1982 defense authorization bill which requested a fairly comprehensive study from the Secretary of Defense—Mr. Latham, you might want to address this too—about ECX and alternative ways of accomplishing the TACAMO mission rather than going to a new aircraft.

Testimony before the committee thus far in these hearings has indicated that ECX is a part of the President's strategic C^3 modernization program. We'd like to know where things stand with that report. Have you, in fact, prejudged the issue by making this decision to go with ECX and will we have the decision and the papers accompanying it before we get this report or after we get the report and why?

Admiral Nagler. Let me address that from the Navy's standpoint and then I will ask Mr. Latham and Dr. Wade from DOD to address it.

The report directed by this committee is in progress. The OSD report is due you by January 20. I have not seen it. The working groups have been working it. I have been told that I would see it by the end of November at the time Don Latham will see it. So I would not want to prejudge what that report will say.

Prior to that direction or at about the same time, it was very close to that direction, the CNO, after a Navy study, made the decision in POM-83 to go forth with an ECX program during the development of POM-83.

During Dr. Wade's strategic review this decision was reiterated to go with the ECX that was in the POM with the proviso that the current steering group, executive committee that Dr. Wade is heading that is ongoing would again review that subject.

So in summary, it is being reviewed as you requested and hopefully we can beat the January 20 date. The sooner we beat that we can clear the air because we want to go out with an RFP based on our previous decision.

So I don't want to prejudge this review that is going on now since I haven't seen it.

Second, it is an ongoing review by Dr. Wade now, so both Congress and OSD is reviewing it. Does that answer the question from the Navy standpoint?

Mr. Gaffney. Well, let me see if I have this straight. You are saying that you have a funding wedge that would permit you to go with an ECX if the decision comes down, as a result of this review, to do so?

Admiral Nagler. Prior to the review, prior to the request for that review, the CNO made the decision in the development of POM-83. As you know, we go through a lot of wickets to arrive at major programs in the Department of the Navy. That was placed in POM-83. As I recall, shortly thereafter this committee came out with saying conduct a review. That is ongoing right now, and while I always hate to say this, I think it is about 3 or 4 weeks ahead of schedule right now—the review.

Mr. GAFFNEY. Well, to put things into perspective, we are going to have the review in hand before a formal submission is made requesting a go-ahead on that aircraft.

Admiral NAGLER. That is correct. That is why we are trying to push that ahead of schedule.

Mr. GAFFNEY. That is all I have.

Mr. LEHMAN. Several members have questions for the record, so the record will stay open indefinitely, but we will try to encourage having questions over to you in the next day.

I would like to comment on one question from the chairman, and that was on this question of endurance. I think that would be useful in clarifying the question of endurance is some kind of time line in which, along the time line you identify, what are the problems to be solved—for example, fuel in the aircraft, crew rest, oil for the engines, engine overhauls, vulnerability, and how your program intends to address each of those problems along the time line. We want to get an idea of the order of magnitude of the problem of providing enduring and survivable C^3 and then how well the program addresses those problems.

[The information follows:]

TACAMO ENDURANCE CONSIDERATIONS

Admiral NAGLER. The most applicable timeline on which to impose TACAMO Endurance Considerations is as follows:

I—Peacetime or Pre-Attack Period.
II—Trans-Attack Period.
III—Post-Attack Period.

Addressing this time line from left to right, the following considerations and the TACAMO method of handling the problem follows:

CREW MAKEUP AND REST

The TACAMO aircrew of fourteen is made up to perform long mission flights safely, and it is also staffed with the ratings required to perform maintenance up to and including engine changes on deployed aircraft. During flights, which are normally between 12 to 14 hours in length, not including pre- and post-flight duties, duty cycles are normally assigned as follows: Two Aviators fly the aircraft and one rests; One Naval Flight Officer acts as Airborne Communications Officer and the other as the Navigator; One Flight Engineer is on the flight deck engaged in aircraft performance monitor, and the other is on rest or in training; the Airborne Communications Supervisor and his crew of three rotate among positions, with three on duty at any one time; the Antenna Reel Operator is engaged in equipment monitor or operation, is at rest or cross-training with other crew members; two Inflight Technicians are engaged in equipment monitor or repair, or relieving communications watches as required. The Mission Commander can be an Aviator or Naval Flight Officer, and is designated by the squadron Commanding Officer, with one per aircrew. The crew rest situation is applicable to all three periods and transition phases. Cycling of aircrew personnel through the operational seats, cross-training and rest periods maximizes the use of rested personnel in all positions on protracted flights. During peacetime, crew rest periods between flights are conducted in accordance with standard Naval Air Training and Operating Procedures (NATOPS) requirements, and no less than 18 hours of ground time is programed between post-flight and pre-flight duties. [Deleted] and the Mission Commander would assign crew rest periods inflight or during brief ground cycles, as practicable.

FUEL AND OIL

Inflight conservation of fuel is one of the Mission Commander's primary considerations, and fuel status is continuously evaluated. Fuel remaining at any point in the mission determines endurance (range) for: (1) mission performance [deleted] and (2), the ability of the aircraft to recover at a suitable airfield to refuel. Even in peacetime, TACAMO operations are conducted in anticipation of the worst case, bolt-from-the-blue nuclear scenario, and maximum fuel conservation is practiced. The Mission Commander's decision is based on the time of receipt of an Emergency Action Message (EAM), time required to transmit to an operating area and transmit messages, time remaining in the operating area and distance to the recovery airfield. [Deleted] TACAMO aircrews are trained in emergency refueling procedures. Sufficient oil is carried aboard the aircraft for some servicing, and oil would be required during fueling operations.

MAINTENANCE CONSIDERATIONS

Engine overhauls are conducted as required, and periodic checks are performed at the crew, squadron and depot levels. The aircrew is capable of removing and replacing engines, but cannot perform the overhaul, which is normally accomplished at a facility much more extensively equipped than an aviation squadron. Standard tool kits for engine maintenance, servicing and repair are carried aboard deployed TACAMO aircraft. Today, in the Atlantic area, spare engines are stored [deleted]. Present arrangements are satisfactory for peacetime operations. [Deleted.]

VULNERABILITY

Today's TACAMO aircraft are vulnerable to threats from enemy platforms, [deleted]. EC–130's are also vulnerable to the effects of Electromagnetic Pulse (EMP) radiation. [Deleted.] Owing to the overweight condition, the EC–130 has no growth potential. Mission Vulnerability is projected: The approved force level of 18 EC–130's will provide continuous airborne coverage in the Atlantic and Pacific after 1983, if overweight operations are continued, [deleted] the Navy has decided to replace the EC–130 in the TACAMO role with a modern, more capable aircraft (ECX). This aircraft would [deleted]. The capability of ECX to refuel in flight would provide an added dimension for the operational commander, enhancing connectivity to the seaborne deterrent.

Mr. LEHMAN. We have the following questions to be answered for the hearing record.

[Questions with answers supplied follow:]

QUESTION SUBMITTED BY SENATOR STROM THURMOND

Senator THURMOND. Dr. Wade, in his testimony on November 3, 1981 in front of the Foreign Relations Committee, Secretary Weinberger testified that, as part of the improvement of the C^3 system, the Satellites themselves will be upgraded to improve survivability. Dr. Wade, is this an improvement in the survivability of the satellite system as whole, and, if so, what are the basic ingredients of that survivability?

Dr. WADE. We are planning substantial increases in satellite survivability for Milstar which we intend to launch in 1987. As presently defined, Milstar will be [deleted]. For all of these reasons we believe that Milstar will provide a high degree of survivability.

Senator THURMOND. Dr. Wade, in the approach taken by the Administration, one leg of the TRIAD would be a fixed position MX system. This could mean that severe requirements will be placed on the C^3 system to provide warning, attack assessment and timely issuance of commands by the National Command Authority. Dr. Wade, what assurances do we have that this approach would not be too risky in terms of our ability to launch those missiles before they are destroyed? Has the administration conducted any studies in this area?

Dr. WADE. The requirements on the C^3 system for direction and control of the strategic forces are indeed severe. As a result of a recent review of strategic connectivity that was conducted by the Department of Defense by direction of the President, we are strengthening the capability of the system to meet those requirements. One of the consequences of the programs that were defined by the review is that we will retain our option to launch the fixed-site intercontinental ballistic missiles (ICBMs) before they can be destroyed by enemy attack. The steps we are taking include improvements in the [deleted] missile attack warning information and enhancements to survivability and timeliness of decision-making processes and communications to the ICBM forces.

QUESTIONS SUBMITTED BY SENATOR SAM NUNN

STRATEGIC COMMAND, CONTROL, AND COMMUNICATIONS

Senator NUNN. How does this package of C^3 initiatives address the problems of connectivity outlined by the SAC Study and detailed in testimony, especially by General Ellis, in the last several years?

General DICKINSON. The Strategic C^3 Program represents [deleted] a long-term, consistent approach to correcting the deficiencies identified in several [deleted] studies, [deleted]. All of the top priority needs presently identified have been addressed in the program and funded in the immediate years. Our work, of course, will continue to refine those parts of the program in the out-years.

C^3 STABILITY

Senator NUNN. What do you consider the contribution of strategic C^3 to stability at the strategic nuclear level and what elements are most important to stability—warning, survivability or endurance or all three?

ANSWER. A strong strategic C^3 system is critically important for stability. Without such a system, we could not assure positive control of the strategic forces in peacetime, nor that those forces could be employed when needed and in the manner best suited for a favorable outcome. Warning, command and control, and communications are all essential functional elements of strategic C^3 and must be balanced in strength. Survivability and endurance must be achieved in consonance with national policy for deterrence of nuclear conflict.

Senator NUNN. What are the plans to improve communication with our SSBNs both with ground-based systems and airborne platforms?

ANSWER. We are supporting several initiatives to strengthen communications with the strategic submarine forces. Our current plans call for development of an EC–X aircraft, with an IOC of 1990, to replace the current TACAMO EC–130 aircraft; the additional range, endurance and payload of the replacement airframe will enhance the capability of the TACAMO mission. We will also continue upgrades to the EC–130s to maintain the current capability until the EC–X is available. We will also upgrade the current fixed VLF/LF transmitters which are over twenty years old and becoming increasingly difficult to maintain, and we will develop new mobile, reconstitutable systems to reinforce the endurance of communications to the submarines. In addition, connectivity to submarines which are not in direct contact with other communication systems will be enhanced via upgrade of the existing Wisconsin Extremely Low Frequency (ELF) communications Test Facility and construction of a new ELF transmitter facility and antenna array in Michigan.

TACAMO FLEET IMPROVEMENTS

Senator NUNN. What is the status of plans to improve the TACAMO fleet and why are these improvements necessary?

Admiral NAGLER. The present force has limitations which restrict its operational effectiveness; [deleted]. To correct this condition, the Navy is undertaking its replacement with a new more capable airframe designated ECX. An RFP for this system is expected to be issued in early 1982. Until such time an ECX capability is realized the existing TACAMO fleet will be maintained and modernized as necessary to retain the best possible operational readiness posture. Improvements to the force include:

1. Increase in the force level from 13 to 18 in order to establish a 100 percent airborne operation in two-oceans [deleted]. The 14th aircraft has been delivered to TACAMOPAC and the contract for the 18th aircraft was awarded on 26 March 1981.
2. [Deleted.]
3. Continued update of flight deck avionics to maintain safety of flight and mission operations. The C–130 airframe has served the Navy well in this program; [deleted].

ECX AIRCRAFT FOR TACAMO

Senator NUNN. Has a decision been made to develop a new ECX aircraft for the TACAMO mission and what would be the role and missions for this new aircraft?

Admiral **Nagler**. In order to avoid further investment in the obsolescent C–130 airframe, the decision has been made to procure the planned more capable ECX airframe. The significant increase [deleted] will be initially utilized in TACAMO Pacific deployment [deleted]. The need for the TACAMO replacement aircraft [deleted] dictates that an in-production aircraft capable of performing the TACAMO mission be the subject of competitive bidding with the dissemination of the Request for Proposals (REP) in early fiscal year 1982. The role of this new ECX aircraft will be to perform the TACAMO mission requirements as established by the MEECN architecture and JCS requirements into the next century.

STATUS OF TACAMO ALTERNATIVES

Senator **Nunn**. What is the status of the report required by the SASC on alternatives to the present TACAMO system? The report on alternatives to include: (1) modernization of the TACAMO communications suite to reduce its weight; (2) decreasing the weight of the EC–130 airframe; (3) replacing the EC–130s with a new or modified airframe; (4) accelerating development and deployment of advanced communications technologies which may replace the TACAMO fleet altogether—is due by January 20, 1982.

Admiral **Nagler**. The report is in the final stages of staffing and will be submitted to Congress by SECDEF prior to 20 January 1982.

Senator **Nunn**. Has the thorough review of alternatives been conducted by the Secretary of Defense as required?

Dr. **Wade**. The SASC-requested review of alternatives for the current TACAMO capability will be accomplished in accordance with the schedule which calls for delivery of that review to the Congress by January 20, 1982.

Senator **Nunn**. Does DOD support the procurement of the SE PAVE PAWS site in the fiscal year 1982 budget and has DOD requested funding in the appropriations cycle since the total scope of this project is not subject to authorization?

Dr. **Wade**. The Department of Defense strongly supports fiscal year 1982 funding of the southeast PAVE PAWS radar facility and has requested appropriation of the full amount for this purpose. Together with subsequent construction of a southwest PAVE PAWS facility, this initiative will reinforce our surveillance coverage of potential submarine-launched ballistic missile launch areas. The southeast site will also provide detection and tracking data on space objects to the Spacetrack system, and timely construction will obviate the need for an expensive refurbishment and modernization of the existing AN/FPS–85 radar in Florida, which was built in the early 1960's. If the Congress fails to support the SASC initiative, the overall program will slip by about 2 years.

Senator **Nunn**. Secretary Weinberger stated before the Senate Foreign Relations Committee today that "Improvements in command and control are particularly important since by enhancing the survivability and effectiveness of our forces they reduce the total size of the forces required. Thus we are making qualitative command and control improvements in lieu of quantitative force expansion." What specific programs are being reduced, if any, or obviated by these C^3 items?

Answer. By improving the strategic command and control system, we can strengthen deterrence of nuclear war in a number of ways. What we obviate is the need to match the Soviet Union's' ICBM force in terms of the usual static measures—throw weight, for example—to preserve the balance. We also obviate the need to depend solely on a launch-under-attack option.

Senator **Nunn**. General Ellis had recommended that a restructuring of the strategic connectivity organizations be accomplished by putting a person in charge who was responsible directly to the Secretary of Defense instead of the current arrangement with an Assistant Secretary responsible to USDR&E. Has any action been taken on this recommendation?

Answer. The Department of Defense made a special effort to organize for improved management and oversight of strategic C^3I. Our efforts are aimed at improving the balance in planning for strategic weapons and the C^3I systems designed to support them. The Department is pursuing an integrated effort which includes the assignment of C^3 personnel as liaison to the major weapons systems research, development, and acquisition offices. It is appropriate for this entire effort to be organized within the office of the Under Secretary of Defense for Research and Engineering. We believe that the Deputy Under Secretary of Defense (C^3I), in coordination with strategic systems R. D. & A. offices, is in a position to exert appropriate influence and direction over the strategic connectivity programs in question.

Senator NUNN. What are the problems in respect to a Soviet bomber and/or cruise missile attack on CONUS and what does the new C^3 package do to eliminate these problems? Does it make sense to upgrade the air defense capabilities without C^3 improvements? Are the two working in parallel?

ANSWER. There are several problems associated with the Soviet air-breathing threat against CONUS. [Deleted.]

The new C^3 package is focused on assuring the availability of means for survivability enhancement and direction of the strategic offensive forces, and does not directly address the problems of North American air defense. However, several of the initiatives being pursued for greater endurance of strategic command and control, warning and communications will directly or indirectly benefit our efforts to modernize the North American air defense system, and are being taken into account in our planning for this mission area. The two areas are being worked in parallel. It would not make sense to upgrade the air defense capabilities without C^3 improvements, because the C^3 system would still retain its existing deficiencies and vulnerabilities to missile attack.

Senator NUNN. The Congressional Budget Office just completed a study on Strategic C^3: Alternative Approaches for Modernization. Have you read this study?

ANSWER. Yes, the Congressional Budget Office study addresses in a well-organized fashion several of the shortcomings in the present strategic C^3 system, in terms of programmatic alternatives perceived by the study team at the time.

Senator NUNN. The three options that CBO outlines include: (1) improve system responsiveness in the trans-attack period; (2) improve system endurance in the post-attack period; (3) improve both system responsiveness and endurance. Which one of these options, if any, does the new C^3 package most nearly correspond to?

ANSWER. The new C^3 initiatives address three broad areas of need: (1) assurance of peacetime credibility; (2) capability to respond quickly to a large-scale nuclear attack on the U.S., the strategic forces and the strategic C^3 system; and, (3) endurance of strategic force direction capabilities needed to support the forces during extended conflict. [Deleted.]

Senator NUNN. Do your cost estimates correspond to those outlined by the CBO? Option one was $16 billion in 1982 dollars, option two is $15.7 billion, and option three is $17.8 billion.

ANSWER. The cost estimates for the new strategic C^3 initiatives are $18 billion—in fiscal year 1982 dollars—over fiscal year 1982–1987. These correspond most closely with the third option in the Congressional Budget Office study.

Senator NUNN. The CBO states in their study that ". . . although improvements in both responsiveness and endurance are clearly desirable, they are not compatible objectives from the standpoint of modernization." Do you agree with that statement?

ANSWER. We believe that the objectives of quick responsiveness and endurance are both compatible and essential. The point of divergence with the views of the Congressional Budget Office (CBO) study is that the CBO study tacitly assumes that a single system must satisfy both objectives. Further analysis indicates that there is a need for a capability for responsiveness during the very rapid transition to war that would occur in a sudden large-scale nuclear attack, and an enduring capability for management of the strategic forces extended conflict, following an initial attack. The new strategic C^3 initiatives emphasize assurance of responsiveness, with the attendant programs providing a foundation for the enduring capability.

Mr. LEHMAN. Thank you very much. The hearing is adjourned.

[Whereupon, at 4:42 p.m., the committee adjourned, to reconvene at the call of the Chair.]

STRATEGIC FORCE MODERNIZATION PROGRAMS

WEDNESDAY, NOVEMBER 4, 1981

U.S. Senate,
Subcommittee on Strategic and
Theater Nuclear Forces,
Committee on Armed Services,
Washington, D.C.

IMPLEMENTATION OF STRATEGIC DECISION

The subcommittee met in open session at 10:08 a.m., pursuant to notice, in room 212, Russell Senate Office Building, Senator John W. Warner, chairman, presiding.

Present: Senators Warner, Quayle, Jackson, Nunn, Exon, and Levin.

Staff present: Frank J. Gaffney, professional staff member; Francis J. Sullivan, minority staff director; James F. McGovern, general counsel; Paul C. Besozzi, minority counsel; Brenda K. Hudson, assistant chief clerk; Ronald F. Lehman, David S. Lyles, and E. George Riedel, professional staff members, and Karen A. Love, staff assistant.

Also present: Buzz Hefti, assistant to Senator Warner; Jim Dykstra, assistant to Senator Cohen; Robert Nichols, assistant to Senator Jackson; Frank Krebs, assistant to Senator Cannon; Arnold Punaro, assistant to Senator Nunn; Greg Pallas, assistant to Senator Exon; and Peter Lennon, assistant to Senator Levin.

OPENING STATEMENT BY SENATOR JOHN W. WARNER, CHAIRMAN

Senator Warner. Good morning, ladies and gentlemen. I apologize for being a minute or two tardy. I have a hearing going on shale oil in the Energy Committee and I am trying to attend both of them.

Today we will hear testimony about President Reagan's strategic forces modernization program from a witness who has a truly unique view. It is your job, General, and those in your command, to make work what we have in place today and to advise those of us working with the President of what we need in the future, and then again to make the whole system work, the improved system.

As Commander in Chief of the Strategic Air Command and also Director of the Joint Strategic Activities Staff, and Director of the Joint Strategic Target Planning Staff, Gen. Bennie C. Davis has responsibilities throughout the range of strategic mission areas, each of which is in some way affected by the President's decision. He has operational command of the ICBM and bomber legs of the strategic deterrent. He is charged with drawing up the list of target requirements which all three components of our nuclear Triad must be capable of attacking.

In addition, General Davis oversees the planning and analyses that provide assessment of and recommend improvements to the U.S. strategic command, control, and communications system, C^3.

Consequently, General Davis brings to his testimony this morning a unique perspective that is at once an operator's and a bird's eye view of the administration's comprehensive strategic package. His responsibilities give him a user's understanding of the specific consequences and implications of the broad range of initiatives recommended by the President, and we look forward to learning how this program, seen from that perspective, differs from the Carter program it succeeds.

General Davis, we welcome you to your first appearance before the Senate Armed Services Subcommittee in your new capacities. We expect from you—and I know we will get—your candid, personal, and professional judgment on the issues of momentous importance which we will be addressing today.

It has been the policy of the chairman to endeavor to have as much as possible of these hearings in open session. This is a very expensive program submitted by the President. I am trying to be supportive. Nevertheless, I have an obligation to my colleagues in the Senate and to all Americans to evaluate thoroughly each and every element of the President's program, to determine not only its necessity from a military point of view to augment our deterrent capability but also to determine whether or not we can afford it.

We are pleased to have you here in open session. We will do as much as we can in open session, with the hope that this record will be made available to the public and to our colleagues for the purposes of debate in the Senate.

Thank you.

General, you may proceed.

STATEMENT OF GEN. B. L. DAVIS, USAF, COMMANDER IN CHIEF, STRATEGIC AIR COMMAND; DIRECTOR, STRATEGIC TARGET PLANNING; DIRECTOR, STRATEGIC CONNECTIVITY, JOINT CHIEFS OF STAFF

General Davis. Yes, sir, and thank you, Mr. Chairman. I sincerely welcome the opportunity to appear before you today to discuss some of the recent Presidential decisions on strategic modernization in my role as Commander in Chief of the Strategic Air Command, and as you mentioned, the Director of the Joint Strategic Target Planning Staff and Director of the Joint Strategic Connectivity Staff.

At this time, if you have no objection, I would like to submit my classified statement for the record and with your approval——

Senator Warner. You mean your unclassified statement?

General Davis. My classified statement, and with your approval give a brief unclassified summary.

Senator Warner. We will receive your classified statement when we go into executive session. For the time being, we will receive in its entirety your unclassified statement and you may proceed as you desire with respect to addressing that.

General **Davis**. Yes, sir.

As the combatant commander with the responsibility for maintaining two legs of the strategic Triad, I am pleased that the years of cancellations and delays involving critically needed strategic modernization are about to end. The commitment of the President to strengthen our Triad forces, as outlined in his five-point program, represents a significant beginning to arresting our deteriorating strategic position, thereby enhancing deterrence.

Deterrence, in the fina analysis, is a function of perception. A viable deterrent force must be perceived to be capable, credible, and stable. When viewed in its entirety, the President's program sets in motion a course of action that provides us with these three elements, not only for the near term but also well into the 1990's and beyond.

To deter the Soviet Union from attempting a nuclear attack, we must make it clear that we have both the requisite strategic forces for devastating retaliation and the will to use them if necessary. These two elements—capable forces and national resolve—must exist simultaneously to make our deterrent credible. If either element is lacking, SAC's ability to carry out its deterrent mission becomes tenuous at best.

While the President's program will not close the window of vulnerability overnight, it certainly will make a major contribution in reversing the adverse strategic balance we have allowed to develop over the past several years.

Senator **Warner**. I want to make reference to your predecessor in office. He certainly was a stalwart in trying to reverse that decline, and through the years he enjoyed, I must say, a unique credibility before this committee and other committees of the Congress, and we fully expect you likewise to attain that record.

General **Davis**. I appreciate that comment, Mr. Chairman. I want the committee to know that I will give you the most honest answers that I know, and I don't think you would want it any other way.

Senator **Warner**. There seems to be a tradition of independence and independent thinking in your assignment, and I hope you will keep that going.

General **Davis**. Thank you, sir.

The program which was outlined is important, on two counts: First, it provides us with more survivable and capable forces quickly to bridge the near-term gap. Second, it sets the stage for developing the longer term forces needed to protect our national interests in the 1990's and beyond.

By dedicating ourselves to the early deployment of more capable and ready forces, we are likewise bolstering that less tangible element required for effective deterrence—unquestioned national resolve. By setting in motion the production lines to develop the MX missiles and the B–1 bomber while simultaneously upgrading our command, control and communications capabilities, C^3, we are sending a crucial message to friends and foes alike: America stands ready to take whatever steps are necessary to protect its vital interests at home and abroad.

The contribution of nuclear weapons to our national security is derived from their ability to influence the behavior of potential adversaries so the occasion for using them will never arise. To achieve this goal, both the United States and the Soviets must perceive the strategic equation as stable, one in which neither side will gain any advantage from initiating a nuclear war.

I might state at this point I am clearly in favor of verifiable strategic arms limitations. I think SALT is the long-term answer and one that we must all earnestly strive for.

Now, a key element in the U.S. approach to maintaining this type of stability is to pursue equitable and verifiable arms reduction agreements. It is my belief that the only way to convince the Soviets that an arms reduction agreement is in their best interest as well as ours is to convince them they cannot and will not dominate the strategic nuclear balance. I am convinced the President's program, both real and perceived, transmits this message to the Soviet Union.

I would now like to cover in more detail those areas in the President's announcement that have an immediate impact on SAC—the MX, the B-1, and the advanced technology bomber, ATB, and our network of command, control, and communications systems.

Senator **Warner**. Before getting into the specifics, I noted this morning in the testimony that the Secretary of Defense gave where he clarified beyond any doubt the intention of the President to go forward, but going forward in a manner such as not to try and achieve a superiority of the totality of our deterrents over the Soviets, but to resume the momentum that will bring us up basically to equivalency.

General **Davis**. To parity, yes.

Senator **Warner**. That is your understanding also?

General **Davis**. That is my understanding.

Senator **Warner**. That is good. Will you proceed then.

MX

General **Davis**. The centerpiece of this country's nuclear deterrent force is our land-based intercontinental ballistic missile, ICBM, force.

For several years we have projected a time when improvements in Soviet ICBM accuracy and throw weight would enable them to destroy a significant portion of our land-based ICBM's in a preemptive first strike. That threat is a very real one.

In an attempt to correct this growing vulnerability, SAC has in the past advocated deploying the MX missile in the multiple protective shelter, MPS, basing mode. The decision to abandon the MPS mode and deploy MX missiles in existing silos has created a bit of controversy.

While the Air Force and SAC would have preferred to deploy MX in MPS, I fully support the President's decision to begin the earliest possible deployment of the MX in existing silos while continuing to study alternate basing modes.

Although missile vulnerability remains a difficult issue to solve, it is separate and distinct from an equally important concern, the need for the MX missile itself. With the increased hardness of Soviet ICBM's, there remains a pressing need for us to retain a capability that provides us with a prompt hard-target retaliatory force. The MX provides us with such a countersilo weapon.

It is important, therefore, as we begin to address the survivability problem of ICBM's in silos that we do not lose sight of the other pressing requirement for the missile itself.

Senator **Warner**. General, I have to take a brief recess. The Energy Committee is taking up a bill on oil shale which I am sponsoring and it will require less than 15 minutes for me to go over and present that bill in a markup session and to come right back. I apologize to you, sir, and the others involved in this hearing and beg your indulgence while I handle this matter.

General **Davis**. Yes, sir.

[Brief recess.]

Senator **Warner**. Thank you for accommodating me.

Senator Jackson, who, incidentally, is also working with me on this particular piece of legislation, wished me to convey to you, General, his apologies for not being here this morning. He and I together are on this bill and he is handling that bill and I am working this, but he will join us sometime today in the closed hearing, because he has some questions and observations that he would like to share.

General **Davis**. Thank you.

If I may resume, I had just started on the B–1 and the advanced technology bomber, the ATB.

B–1 BOMBER AND ADVANCED TECHNOLOGY BOMBER

General **Davis**. For some time now, SAC has advocated both the B–1 and the ATB and therefore I am very pleased with the President's decision to proceed with the B–1 and to pursue aggressively the development of the advanced technology bomber.

A force of 100 B–1B aircraft in the near term will serve four important purposes: First, it will provide us with a much needed capability to bridge the growing disparity between United States and Soviet warfighting capabilities; second, it will retain for us the penetration capability needed in a manned-bomber system; third, it will send a clear signal that our resolve to restore the nuclear balance remains strong; and, fourth, it provides us a very much needed conventional capability for worldwide projection of forces.

Some have said that this is an interim bomber. Clearly, from the operator's point of view it is not an interim bomber; it is a bomber that will probably last us 20 years or longer with our experience with bombers. It has a very great capability.

Some critics have argued that the B–1 will be obsolete by the time it is deployed. This is simply not the case. The B–1B takes advantage of all the latest state-of-the-art technology, both in offensive and defensive avionics, as well as parts of the Stealth technology.

With these advances being introduced into the development of the B–1, its penetration capability will be assured well into the 1990's. One important point: If we don't freeze on a production design for an aircraft now, and instead put off the decision on the basis of waiting for new technologies to develop, we may never produce another bomber aircraft.

The advanced technologies and developments in propulsion, light-weight materials and reduced radar visibility being studied for the advanced-technology bomber are very promising and should continue at an accelerated pace; however, even under the most optimistic schedule we could not expect an operational squadron of ATB's manned by Air Force crews before the early 1990's.

The B-1B is needed now, both to reduce the disparity between United States and Soviet strategic capability and to provide an effective penetrator until the advanced-technology bomber is available.

We need to drop that scripture that talks about "interim."

COMMAND, CONTROL, AND COMMUNICATIONS (C^3)

General DAVIS. Turning now to C^3—and I must say that I appreciate what the committee has done in the world of C^3 in conference to get us started on some vital links that we need in this activity which I am very concerned about—having a capability to execute our forces. I appreciate very much the committee's activities this past spring in holding the position in conference, and I know it took a great deal of effort and I want you to know I appreciate that.

Senator WARNER. That is an area where your predecessor was very active and brought to my attention and focused the attention of other members on this subcommittee the need to begin enhancement of that C^3 package with the fiscal year 1982 authorization.

In some respects, we were a step ahead of the administration in that area.

General DAVIS. A critical element that underlies all the modernization I just mentioned is our ability to communicate with these forces. As this committee is well aware, there is considerable doubt that our current C^3 systems are adequate to the task under conditions of nuclear warfare.

The President's commitment that C^3 be accorded the highest priority is a much needed first step to correct the deficiencies that exist today and improve our command, control, and communications capability in the future.

Many of the programs recommended by the President provide for improvements in 1985 and beyond. Near-term programs to correct critical deficiencies that exist today are also urgently needed. Options are available and we have recommended a preferred course of action to the Joint Chiefs of Staff [JCS] and the Office of the Secretary of Defense [OSD].

For the future, close attention is required to insure that our C^3 systems are kept abreast of our follow-on weapon systems. The full, required capability will not be achieved quickly, but with efficient management and continued support of the Congress I am optimistic that our C^3 systems will be better able to support our national policy in the not too distant future.

SUMMARY

In summary, the strategic initiatives outlined by the President represent an important beginning in reversing the adverse trend that has been allowed to develop over the years.

In the meantime, as we wait for these new systems to be fully operational, it is absolutely essential that our current systems—the ones we have to operate today on a day-to-day basis—continue to receive the funding necessary to insure their effectiveness.

It is even more important that we continue to provide for the quality of life of the most important ingredient of our strategic force—our people.

SAC will do its part to see that the new systems and initiatives are fully implemented. We applaud the recent decisions to begin in earnest the road to strategic recovery and call upon you—our elected representatives—to see that the initiatives and programs outlined remain on track and on schedule.

I have available copies of a classified analysis of the impact these initiatives will have on the projected strategic balance. I will be happy to distribute those to you and discuss them when we enter closed session.

I understand that there are many questions and there is a lot of money involved, but from my view, from an operational viewpoint and my view as a citizen, I really don't think we can provide any less than the best defense for our country. Thank you.

Senator WARNER. Well, let us just take that point as our start of the questioning and ask the toughest question. I put it to the Chief of Staff of the Air Force and he provided an answer.

I am personally hopeful that we can establish both the justification and the availability of funds for the program covering manned bombers. I think the description of this program, it has to be articulated with care. The words "joint program" have been used, and I think it is a sequential program. The reason those words are important is because they dwell on the funding issue.

Now, the legislative process that I developed yesterday with Chairman Tower and the leadership of the Senate for these particular programs could be rather perilous in terms of procedure. I remember, regrettably, last year the decisions on the strategic program were made about 2 or 3 o'clock in the morning. We may be faced with a comparable problem this year. I hope not. But, nevertheless, there could develop on the floor a situation where those of us in a leadership position regarding the armed services would have to determine whether to go forward with the full funding of the B-1 and for full funding of the ATB program as now established, but not both.

Another alternative might be for full funding of the B-1 and a decelerated ATB. This committee needs your expert advice in determining the priorities.

If confined to the situation where we cannot fully fund both the B-1B and the proposed follow-on ATB R. & D., what would be your choice between those two?

General DAVIS. As you suggested, that is the toughest question of all, Mr. Chairman. Obviously, they are sequential programs.

If you might indulge me for a moment, I will go back some 31 years and discuss my flying record. I started in B-29's in the early 1950's, and at that time we had in late stages of development the B-29 successor, the B-47.

As I went with the B-47's in the mid 1950's, we had the successor airplane for that in R. & D., the B-52, and indeed in advanced R. & D. a supersonic bomber, the B-58.

Other than making do with a pretty good airplane called the FB-111, we—and I am speaking collectively for the country and its legislators—we have not had a sequential strategic bomber development since we quit on the B-47 and the B-52.

If put to the test and this country says we cannot afford two bomber programs at the pace proposed, I must go with the near-term capability, which is the significant capability, and that is, the B–1. That does not say that we kill the ATB forever; it certainly doesn't and we ought to proceed on it.

Senator WARNER. I agree. I cannot envision a scenario where we would abandon it.

The question would be at what rate can we afford to expend funds for the ATB.

As I understand your priority, if we were forced to make a decision between those two programs, emphasis should then be placed on the B–1B program and whatever shortfall of funds may exist, the impact of that will have to fall on the rate at which we perform R. & D. in the ATB?

General DAVIS. That is correct, Mr. Chairman. I think is is very important that we go with the capability we know the most about; that is, the B–1. It is not that a lot of funds could not take you faster in the other program, but is is my considered judgment, knowing a bit about qualifying crews and maintaining airplanes, that we are far better off in this country to take it sequentially and go with the B–1 first.

Senator WARNER. In connection with that decision, the underlying record and facts will have to be developed, and the critical point is the capability of, first, the mission of the B–1B as you foresee it as the operator. You have to address the ability of that bomber to perform as a standoff with the cruise missile and in a combined penetration/standoff mix and for penetration solely.

To the extent we can in open session, let us expand on those observations you made on page 5 with respect to the B–1B aircraft and start off with the mission profile as you anticipate using it as the user.

General DAVIS. I anticipate using this aircraft as a very highly effective penetrator, as I say, well into the 1990's. The fact that we are going to provide for cruise missile carriage at the outset, as a Presidential decision, will give us that capability at the point where we want to use it.

I do not anticipate its initial deployment involving both shoot and penetrate. I see it in the very early stages as a pure penetrator. It has a significant capability to do that, with a reduced radar cross-section, with what we know about advanced electronic capability measures, and I am very confident—I can go into more detail as to why I am confident in the closed session—but I am very confident that we can penetrate into heavily defended areas where we should, and penetrate well into the 1990's.

The B–52, at least the "G", will probably not be able to penetrate very effectively much past 1987 or 1988, and I would expect the "H" to penetrate to 1989 or so and then become pure standoff cruise-missile carriers.

But the mission profile of the B–1, as I envision it, is a penetrator and it will have the capability for a number of weapons, both gravity and cruise-missile weapons, well into the 1990's; then we can make it a standoff weapon as we get the advanced-technology bomber.

But one needs to look at the threat, and the threat is not all that clear in the mid- to late 1990's. I believe I have covered, to the extent I can in open session at least, my confidence in its ability to do that mission.

I have a strategic balance chart that I believe the committee is familiar with and I am prepared to go over it with the members in the closed session.

Senator WARNER. Are you familiar with a draft GAO report addressing certain aspects of the B-1 program, particularly the possibility it is underfunded as now stated?

General DAVIS. Yes, sir, I am. I obviously am not responsible for costs, but as the operational commander and one who is interested in improving our capability, I try to keep abreast of most of these issues, and I am aware of that draft GAO letter.

The Air Force is aware of it, and the Air Force is working with GAO to resolve some of the differences with that report, which is not unusual in my experience over the last 10 or 15 years. The differences between the draft and the final report are oftentimes very significant.

When you explain to an auditor or to one looking at a program, you certainly want to gain everything you can out of that audit report. It is designed to help you.

I believe in the GAO versus the Air Force program, the Air Force has also had an independent cost assessment done which there is some question on. Again, those are a group of auditors or a group of program people using their assumptions and looking at your program, and if you are within about 3 percent, that is a pretty good guideline; that is, at least from a management consultant standpoint.

Senator WARNER. You don't have primary responsibility, but I wanted to make sure you had an awareness.

There is also a CIA report which we will get into in closed session, but do you have any observations in open session on that CIA analysis of the B-52 versus the B-1B?

General DAVIS. Yes, sir, I do. As a matter of fact, of course, the analyst is a very renowned analyst, but principally concerned with Soviet defenses, and I believe he qualified it that way. It was clear that the analyst was talking about a different airplane than we are talking about.

I can go more into that in the closed session, but I believe after the dust has settled, and I wouldn't want to put words in the gentleman's mouth, but on the classified record there is a statement that says clearly he was looking at the wrong airplane.

Senator WARNER. How do the priorities that you have provided us with in respect to the B-1B versus the ATB funding profile relate to the importance of an MX system?

General DAVIS. First let me say that the MX is vital; I believe it is vital to get the missile produced on an interim basis and put it in a silo, or put it in silos, because of what it contributes to the overall perception. It gives you a time-urgent, hard-target kill capability. That is a very, very important feature.

It demonstrates national resolve and that part is incalculable. When one gets into survivability, that is, the ability to absorb a first strike and retaliate, clearly a total system of MX's in hardened silos, superhardened silos, does not provide you the same degree of survivability that you would expect under an MPS system. However, at the point of time we are talking about, deployment probably in 1986, I think at that point in time they provide you about the same capability you would have had with the MX in MPS.

I think it is very high priority; a very high priority.

Senator Warner. Let me go back over it again, to make certain that I understand your position.

One, there is no equivocation with respect to the continuation of the missile itself, that it is absolutely essential?

General Davis. Yes.

Senator Warner. As to the basing mode, you stated that there was a preference in the Air Force and your command, and that your predecessor commander in chief that the MPS would have been a preferable basing mode, as opposed to the decision now of the interim MX Titan silo with future R. & D. on a successor basing.

Now, had we gone ahead—I will ask the question slightly differently—had we gone ahead with a multiple protective shelter system, or something employing deception, would your order of priorities on the B-1B be different?

General Davis. Yes.

Senator Warner. You would then have placed emphasis on the ATB vice the B-1, is that correct?

General Davis. No, sir.

Senator Warner. Excuse me; you said different?

General Davis. No, different, as I believe you said, MX, B-1 and ATB. My priority for MX in a survivable mode would have been higher.

Senator Warner. You mean in an MPS mode?

General Davis. Yes.

Senator Warner. In terms of your overall strategic priority, No. 1 would have been MX in MPS type shelters?

General Davis. Yes.

Senator Warner. And then the B-1?

General Davis. Yes.

Senator Warner. And then the ATB?

General Davis. Yes.

Senator Warner. Given the President's submission to Congress, his intention to go ahead with the missile in an interim basing mode, your first priority now becomes the B-1?

General Davis. Yes, sir.

Senator Warner. And what is the priority between the ATB funding and the interim basing mode?

General Davis. I believe we must proceed with MX, and we must produce that.

Senator Warner. That is the missile?

General Davis. Yes; that is right, and as you suggest, a reduced funding line.

Senator Warner. I am not suggesting it. What I am trying to portray is a scenario in the Senate, when the Senate leadership and when this committee has to make a determination of which program to emphasize with our colleagues, recognizing that all of the funding is not going to be provided by the Senate as a whole, which avenue do we suggest to our colleagues to take.

If I understand you correctly, it would be in the following order: The B-1 would be the first priority, an MX missile itself the second, and now as to the priority between expending funds on the interim basing mode; namely, using Minuteman in Titan silos, and should we say full steam ahead on R. & D. on ATB, how do you evaluate those two?

General DAVIS. The B–1 is clearly my first choice. The MX is very, very important. Now, on the trades on funding, R. & D. funding, ATB is very, very exciting in technology that we do need. I would say there is an equal priority between the second two.

Senator WARNER. If we have to make a choice, which is 51 and which is 49?

General DAVIS. I would have to say 51 on MX and 49 on the ATB.

Senator WARNER. Fifty-one on the MX interim basing mode? I am putting it on the missile and now trying to draw a contrast between spending funds on putting MX missile in Titan silos and MX silos, versus going ahead with an accelerated ATB R. & D.

Have I framed the question clearly for you, if you are forced to make a decision there?

General DAVIS. It changes a bit. I thought we had decided—well, we couldn't afford to proceed at the same pace with ATB if you went with the B–1, so that is how I understood the question.

The B–1 is clearly my first choice, MX is second and the ATB third.

Senator WARNER. And fourth would be moneys needed for the interim basing mode?

General DAVIS. Yes.

Senator WARNER. That is clear. Thank you.

Now, some concern has been expressed over the early retirement of the B–52's and the Titan II's. In your view, how serious is the decision to retire the B–52 and the Titan II?

General DAVIS. I would obviously have preferred to keep those weapon systems in the inventory weapon systems as long as I could, or until we phase in new weapon systems. That would have been my preference.

I also understand fiscal realities and the costs of such programs. My preference, all things being equal, would have been to retain them.

I understand in the world of fiscal realities why we are phasing them out. It will take us probably until 1986 or 1987 to phase all Titans out. We are looking at, or we in the Strategic Air Command have looked at, and we are proposing, perhaps a slowdown on the phaseout of the last two squadrons of B–52D's. I would have preferred to have kept them until we get the new systems, obviously.

I also understand why they were phased out.

Senator WARNER. To accommodate my colleagues, I will submit to you other questions for the record.

Senator QUAYLE. If I could take 5 minutes, I have to go to another meeting. I will limit it to 5 minutes.

Your statement on the B–1 is that it may be 30 years before we build that airplane. I hope it doesn't keep on going down, but that is not my question.

General DAVIS. I would like to respond to that.

Senator QUAYLE. I only have 5 minutes and I want to focus on the penetrating bomber. I limited myself to 5 minutes and I am going out of turn here.

Under the original B–1——

Senator WARNER. The member can take his full 10 minutes and proceed in the manner you feel appropriate.

Senator QUAYLE. The original B–1 was designed to penetrate defenses at high speed and high altitude; is that correct?

General DAVIS. No.

Senator QUAYLE. What was it?

General DAVIS. At low altitude, at least that is my recollection.

Senator QUAYLE. I thought the original B–1, was going to be a high altitude airplane and then we changed the intended mission once we found out that at high altitudes it was not going to be survivable, and hence we went to a low altitude?

General DAVIS. No, Senator, we went to low altitude in the late 1950's and early 1960's. We went to low altitude because of Soviet SAM defenses.

The old B–70 was originally designed to penetrate high, if one can say that that was the great-grandfather of the B–1, but we have been at low altitude for years.

Senator QUAYLE. We have gone from high to low altitudes, and we are now at low altitude. At what time do you think that use of low altitudes, as far as penetration of the B–1 bomber is concerned, will become impractical because the Soviet Union will have perfected their defenses? Are we talking about the late 1980's and early 1990's?

General DAVIS. No; as you develop low radar cross section and better ECM, and low altitude—the practical limits probably are about 200 feet—you can go for years.

Senator QUAYLE. At what year would what be?

General DAVIS. My crystal ball is not clear much past the year 2000.

Senator QUAYLE. Which is better as a penetrator, the Stealth or the B–1?

General DAVIS. What we are looking at are parameters, at a parametric analysis of what we think things will do, and so one can hypothesize with that analysis, obviously, with lower, low-low radar cross section; but one has to also take account of electronics countermeasures.

Senator QUAYLE. Which would be preferable, if you could have your choice today, or in 1987? Which would you choose, the B–1 or the Stealth?

General DAVIS. As I said earlier, I chose the B–1.

Senator QUAYLE. Do you think the B–1 is preferable as the penetrating bomber?

General DAVIS. In the timeframe, yes.

Senator QUAYLE. Even if you could have Stealth by 1986?

General DAVIS. Well, I don't think that is a good assumption.

Senator QUAYLE. I am just asking a hypothetical question. Which is better, Stealth or the B–1? I am not interested in IOC's. I just want to know which is the better penetrating bomber.

General DAVIS. Of course, the theoretically lower radar cross section.

Senator QUAYLE. That would be the Stealth?

General DAVIS. Yes.

Senator QUAYLE. So Stealth would be. If you could get Stealth earlier on, would you focus on Stealth rather than the B–1?

General DAVIS. I think the question is very hypothetical, Senator.

Senator QUAYLE. Sure it is; a lot of questions are hypothetical, General.

General DAVIS. If we had aircraft that would travel four times the speed of sound, that would be preferable.

Senator QUAYLE. Would we procure the B–1 if we knew it could not penetrate by the late 1980's or 1990's?

General **Davis**. That would be a very, very important factor, Senator.

Senator **Quayle**. Would you recommend that we procure it if it could not penetrate in the late 1980's or early 1990's?

General **Davis**. I don't think that I could.

Senator **Quayle**. So, if testimony proved, or if developments occurred, which showed that the B–1 would not be an effective penetrating bomber, your recommendation would be not to go ahead with it; is that right?

General **Davis**. If it would not be a penetrating bomber, certainly; but we have clearcut evidence that it will.

Senator **Quayle**. Mr. Chairman, I have some other questions, but I must leave and will yield.

I thank the Chairman.

Senator **Warner**. The Chair would be happy to put the Senator's questions in the record.

Did the witness have an adequate opportunity to address the important points raised by the Senator; namely, the witness' opinions with respect to Soviet air defense capabilities in the 1990's? I know we will be covering that in closed session, but I wish to impress upon the witness and others that this debate in all likelihood, the majority of it will take place in open session in the U.S. Senate.

One of the purposes of holding as much of this hearing as possible in open session is to develop that record, so all 100 Senators can refer to it as they work through their decision or in reaching their decision.

The Senator raises an important point about the Soviet defenses. What can you provide in open record on that point?

General **Davis**. The point, which is very hypothetical, is that if you are pretty sure of what you can get in the future, obviously, you would take it today. That hypothesis, if things were perfect today—and that is what I got from the exchange—certainly you would pick the best capability you could possibly get. But from what we know and what we know of the future with fairly good certainty, and what we know of the capabilities of the B–1 today, I am very positive that my best technical judgment is that the B–1 is the way to go. It gives you a significant force projection capability. It is a large airplane and it carries a big payload, which is very, very important to you.

Also, as we have worked our way over the years through special programs, it has taken a lot of capability to maintain and operate them—we are talking about fielding an airplane with the garden variety of Americans in blue suits. One talks about IOC, and one also talks about a realistic date that you have maintainability and supportability—an operable capability.

Senator **Warner**. To touch on this point of garden variety of Americans, I read an interesting article about the opinions of some people as to whether or not the pilots will have the courage to take the risk of trying to perform penetration modes even in the 1980's, much less the 1990's.

Do you have any concern about your training program and the determination of these brave men?

General **Davis**. Yes, sir, I have the highest confidence that our crews, that our people, can do this job. I would like them to have more flying time and I would like to be able to give them a bit more training in that low-altitude mode. Having flown strategic bombers, one of them being the B–52, for about 13 years myself, entering the whole area, the low-level mode and then high speed jets, I think the courage, tenacity, and determination of those American crew members is superb.

Senator WARNER. Senator Nunn?

Senator NUNN. Thank you, Mr. Chairman.

First, General Davis, let me welcome you before this subcommittee in a different capacity. You and I have spent a lot of time talking about the volunteer force and the draft, and now we are shifting to the MX and the B–1. We welcome you and we look forward to working with you.

General DAVIS. Thank you, Senator. I appreciate that.

Senator NUNN. General Davis, in the so-called interim basing mode of the MX, one of the considerations there is the necessity of expanding the volume of the Minuteman silos. Is that right?

General DAVIS. That is one alternative, yes, sir. There are two alternatives. One is the Titan and one is the Minuteman, and if you go to Minuteman, to harden it, then we are talking about expanding the volume of steel and concrete.

Senator NUNN. You mean one of the options is not to expand the Minuteman at all, but to use all Titan holes? That is an option?

I think that Secretary Weinberger was testifying that we were going to use both the Titan and the Minuteman.

General DAVIS. No, if you used Titan, for instance, you could probably do it without expanding the volume of the hole. If you used MX you are going to have to expand the volume of the hole.

Senator NUNN. The Minuteman hole, you mean?

General DAVIS. Yes.

Senator NUNN. But Secretary Weinberger's plan as proposed, doesn't it envision using both the Titan holes and the Minuteman holes?

General DAVIS. Yes, sir, the Air Force has completed its study, preliminary study, and submitted it to the Department of Defense, and obviously we cover both options in there and those are choices, yes, sir.

Senator NUNN. What, approximately, is the amount of volume expansion that is required for the Minuteman hole in order to hold the MX missile?

General DAVIS. Well, the details of that study which are, of course, classified; we have provided an Air Force position to the Department of Defense, and that is under consideration at this time by the Secretary.

I really don't think it would be appropriate for me to talk about that since it is under consideration by the Secretary. I would be happy to cooperate and talk about order of magnitude. It does, indeed require more volume.

Senator NUNN. Is it substantial? Are you talking about increasing severalfold the size of the Minuteman hole?

General DAVIS. Probably, yes, sir.

Senator NUNN. What is the limit in SALT I on the expansion of the existing silos?

General DAVIS. Well, SALT I and SALT II deal with increases but it was clearly concerned with limited deployment of larger missiles with multiple RV's. The MX itself is permissible within SALT, and the Soviets know about us deploying the MX. I am not an expert on SALT, but I believe that the technical part of increasing the silo, as long as you weren't trying to break out or put an illegal new missile in that silo, is probably workable.

Senator NUNN. Well, again my question is, Do you know the approximate limit on the amount of expansion, we can expand the Minuteman holes under SALT I?

General DAVIS. Yes; I believe in SALT I it is 15 percent in any direction and in SALT II it is 32 percent in volume.

Senator NUNN. It is apparent in order to carry out the interim basing mode we would have to expand the Minuteman holes far beyond the limits of SALT I and II, would we not, to hold the MX?

General DAVIS. I believe that is right, yes, sir.

Senator NUNN. So basically the interim basing mode that Secretary Weinberger is proposing really would require either a violation of SALT I and II by the United States or a renegotiation of those points in the treaty, would it not?

General DAVIS. I believe there is enough maneuvering room within the SALT Treaty so that deploying MX in minuteman silos would not be seen as a clear-cut violation. That is my personal opinion.

Senator NUNN. How do you get to that point of view? I don't understand that. If you have a limit of 15 or 30 percent on the expansion of the Minuteman hole, clearly in SALT I and II, and it is going to require a severalfold increase in the volume of the hole, how can the flexibility be there without renegotiation? Are you saying the flexibility is there for renegotiation on those points, or are you saying you could actually do that without violating SALT I and SALT II?

General DAVIS. I think flexibility for the negotiations.

Senator NUNN. But you have to renegotiate with the Soviets SALT I and II to go to that basing mode.

General DAVIS. I don't agree with that at all. I think discussion has to take place on that point; I am not sure you have to renegotiate.

Senator NUNN. Isn't it a fact that the Department of Defense has now concluded just that, that the interim basing mode would violate both SALT I and II?

General DAVIS. That is not my understanding.

Senator NUNN. Have you seen any paper or memorandum or anything on that?

General DAVIS. I have not.

Senator NUNN. So you are saying it would require more discussion with the Soviets but you are distinguishing between further discussion and renegotiation, and how do you distinguish between those two if there is a clear violation that requires discussion? What is the difference between discussing it further and renegotiating?

General DAVIS. Well, I believe in the discussion, if you are talking about a missile that has already been discussed, a medium-sized missile, and an explanation of what you were doing, I believe it is negotiable. That is my own personal opinion.

Senator NUNN. You think the Soviets might agree to it?

General DAVIS. I think there is that possibility; yes.

Senator NUNN. If they didn't agree to it, do you believe we would then be in violation of SALT I and II?

General DAVIS. Technically, probably, yes.

Senator NUNN. Thank you, General.

General Davis, I received several briefings from SAC prior to your taking over as head of it, that had a comparison of the dynamic United States and Soviet strategic nuclear capability of 1977. That was compared to the balance in the past several years and also projected out to 1990. I understand that you have recently been updating portions of this analysis and are completing the others. Is that correct?

General DAVIS. That is correct.

Senator NUNN. Are these classified?

General DAVIS. Yes, sir, they are. I am prepared to go over them in the closed session.

Senator NUNN. Is there anything you can tell us about that, balance in open session at this point, or would you rather reserve the whole subject?

General DAVIS. Well, I think I can say that the balance, or the window of vulnerability or the bathtub, if you do not modernize, gets worse.

Senator NUNN. Could you tell us in general terms about the comparison of the military damage expectancy, that is the MDE under the new proposal, compared to the MDE under the Carter proposal? Could you tell us that in general terms in an open session? That is, the military damage expectancy.

General DAVIS. I understand the question, and I think generally the trend is up. It is very important that we proceed on MX and particularly B-1. I must reserve the details of that for the closed session.

Senator NUNN. What about the residual weapons under the Carter strategic plan compared with the residual weapons under the Reagan plan? That is the weapons that would remain after absorbing a first strike.

General DAVIS. I think that I must discuss that in closed session.

Senator NUNN. Just the question of whether it is in general comparison. Is the Reagan plan higher in residual weapons, or lower?

General DAVIS. I think I would need to discuss that in closed session, sir.

Senator NUNN. I will leave that up to your judgment, but I don't know how that would be classified. I am just asking whether you would have more residual weapons after the Reagan plan or under the Carter plan.

General DAVIS. In my judgment we ought to cover that in closed session.

Senator NUNN. All right, sir.

Does the Reagan plan bring us back to the 1977 level of so-called military damage expectancy?

General DAVIS. Again I think we need to cover that in our classified session.

Senator NUNN. Well, I will ask those questions then, Mr. Chairman, in closed session.

General Davis, the DOD budget shows that the budget for each leg of the Triad has been cut from the so-called POM level in fiscal year 1982, this is the military's own program budget, total reduction in fiscal 82 to $2 to $3 billion for strategic programs. That is the best information I have. The so-called window of vulnerability was first defined by SAC as existing in the early to mid-1980's, until the new strategic programs, that is MX and ALCM, could bring the U.S.S.R. force balance back to the 1977 level.

Now, as I understand it, we are having a more rapid phaseout of some of the B–52's, and a more rapid phaseout of the Titans than we originally envisioned. Are we in effect extending the window of vulnerability? It seems to me that in the near term we are phasing out weapon systems and we are going more toward long-term weapons systems.

I am not asking what this is going to do in the late 1980's or early 1990's, but I am asking if we are making the window of vulnerability extend over a long period of time.

General **Davis.** As I covered earlier, Senator Nunn, of course, as operational commander I would prefer to keep inventory weapons systems in the inventory. I am also mindful of the significant costs of the new strategic proposals and the severe budget problems and I understand the necessity for phasing out some of the older weapons systems. I would have preferred to have kept all of the B–52D's in until we get closer to the B–1 and the MX's and the Titans in until we get closer to the MX.

Senator **Nunn.** I understand that, and I know we all have to concern ourselves with the budget and there may be a legitimate argument that we stretch out, but aren't we, in effect, whatever the reason and whatever the budgetary pressures, are we not in effect extending the window of vulnerability for a longer period of time by reason of the phase-out of these B–52's and Titans?

General **Davis.** In terms of absolute numbers, certainly you lose capability. In terms of some items that I have proposed, like let's consider keeping a couple of squadrons of D's in longer, and the fact that you have a fairly long phase-out period for Titan II's, you lose an increment of capability. There is no question about that.

Senator **Nunn.** We are really going down in capability in the next 4 or 5 years, isn't that correct?

General **Davis.** But it is not precipitously.

Senator **Nunn.** But it is a gradual reduction in capability over the next 5 years?

General **Davis.** In absolute terms; yes.

Senator **Nunn.** Mr. Chairman, I don't want to take up any more time but I think this is very significant. It may very well be the right choice, and the chairman has gone under the table now or left the room, but I will address myself to my Democratic colleagues here, who are now in total control of the committee. Nevertheless, I think this raises a real serious question about what the overall program is doing, and also the question of our posture on the question of when we enter into SALT III negotiations. If we are waiting to enter into SALT III negotiations until we restore the so-called balance as has been defined by SAC for the last 3 or 4 years, we are going to be waiting until at least the late 1980's, because the window of vulnerability is really being expanded by this program for whatever the reason.

General **Davis.** Well, not totally. I will get into that in the closed session.

In my opening statement, I covered that topic. The overall impact of the President's strategic programs is considerable. In my recent memory it is the first total and comprehensive strategic program.

Of course the issue of deterrence is also one of perception, the fact that you are proceeding to modernize your strategic deterrent posture is very, very important. I am not aware that there is a timetable to wait until you get everything deployed before one enters the strategic arms limitation discussions.

Senator NUNN. You wouldn't advocate that, would you?

General DAVIS. No, I think the real way to stability is of course to have a military capability to hold part of his force at risk. But then you have to enter meaningful strategic arms limitations, and that is the way of the future.

Senator NUNN. Thank you very much. My time has expired.

Senator WARNER. Senator Jackson?

Senator JACKSON. I yield to Senator Exon.

Senator EXON. I want to join my colleagues in welcoming you here.

General DAVIS. Thank you, Senator.

Senator EXON. I don't know how much you can testify to some of the questions I am about to ask, but I hope that you can give us some perspective because, as the chairman said earlier, we in the Armed Services Committee are faced with a rather difficult decision here.

You may not agree with it, but I think most of my colleagues agree that with what you describe as the total comprehensive strategic program which has been announced by the President, we have been in essence stood upside-down or on our head about what the majority of members of this committee felt was necessary—primarily because of the advice that we have received from the Strategic Air Command and others who are supposedly in a position to know.

Now let me ask this question, and I recognize that you are in somewhat of a difficult position, but so are we, and we seek the advice of you people who we know and consider experts in this field. Now, can you answer this question:

With regard to the total comprehensive strategic program announced recently by the President, is this a stronger or a weaker overall program than the one it replaced, let's say, for the decade of the 1980's and beyond?

General DAVIS. I believe through the decade of the 1980's it brings us back. It is, I believe, in the long term a stronger program.

Senator EXON. How is it stronger, General, when at least I as one member of this committee was led to believe by people who are very closely associated with you and have been for years, that one of the primary requirements for closing the window of vulnerability was to have the MX missile deployed in some type of a survivable mode. We were led to believe that that was the key, and is it no longer the key?

General DAVIS. It certainly is a key, Senator, but I would like to go over my analysis in the closed portion, using the same criteria that have been shown in previous analyses from SAC, what is the strategic balance, and what this program does vis-a-vis the old program.

Senator EXON. Maybe you will go into a little background and comment on this, if you can. What was your involvement as the head of the Strategic Air Command in the eventual decision made by the President that was announced a month or so ago.

General DAVIS. My involvement was through the JCS and through the Chief of Staff of the Air Force, and through the Secretary of Defense, and I had no direct discussions with the President on the matter.

Senator EXON. You have now said in testimony here, as I understood it, that under present circumstances your No. 1 priority is the B–1, No. 2 is the MX, No. 3 is the Stealth technology, and No. 4 hardened silos. Is that correct, under present circumstances?

General DAVIS. Yes, sir.

Senator EXON. Had I asked you that question 2 months ago would that have been the same, the one, two, three, and four list of priorities then as it is right now?

General DAVIS. No, sir. Given MX in a survivable basing mode, which we felt MPS was, and the fact that it provides you, at least theoretically the capability for the time urgent hard targeting capability, my No. 1 choice would have been the MX.

Senator EXON. Then if I can ask you a followup question, had 60 or 90 days ago you been asked a question of what your top priorities were, what would they have been at that time, one, two, three, or 4?

General DAVIS. MX, B–1, and ATB.

Senator EXON. Thank you, Mr. Chairman. I may have more questions in closed session that I am sure could not be asked in open session.

Thank you very much.

Senator WARNER. Just to clarify the response, you meant MX in an MPS mode?

General DAVIS. Yes, sir.

Senator EXON. I understood that.

Senator WARNER. Senator Levin?

Senator LEVIN. Thank you, Mr. Chairman.

What is the useful life of the B–1 bomber.

General DAVIS. Probably 25 years.

Senator LEVIN. You have told us that it will be good in a penetrating role well into the 1990's.

General DAVIS. Yes.

Senator LEVIN. Would you be more specific? You have given us very specific information on the B–52 going as a penetrator, and on the B–52 you said 1990. What is the year for B–1 penetration capability?

General DAVIS. It is difficult because our intelligence window is not that good. We make projections, but it is impossible to pick a certain date and say that is the date. My dates for B–52's are approximate. When you get into the 1990's they get a little fuzzier.

Senator LEVIN. So you can't be any more specific about B–1B penetration capability, other than we will in the 1990's?

General DAVIS. Not with certainty.

Senator LEVIN. Would you consider the year 1992 well into the 1990's? I am not asking you about the penetration, but would you consider it?

General DAVIS. No.

Senator LEVIN. How about 1993?

General DAVIS. No.

Senator LEVIN. 1994?

General DAVIS. I think about 1995.

Senator LEVIN. So you are saying that you are satisfied that the B–1 can penetrate at least to 1995.

General DAVIS. Again, that is awfully finite. I am satisfied it can penetrate into the 1990's.

Now, if some technological breakthrough occurs in 1994, I can't be so sure, but that is an estimate.

Senator LEVIN. So your estimate perhaps is more accurately stated as being into 1990's rather than well into the 1990's?

General DAVIS. I would say well into the 1990's.

Senator LEVIN. But you defined it at least to 1994.

General DAVIS. 1995, yes.

Senator LEVIN. Let's now go to the Stealth IOC. You have described as the early 1990's. Is that consistent in your mind with the statements and letters of General Ellis, that 1990 is the date for Stealth? Is there any inconsistency between saying 1990's as Ellis did, or the early 1990's, as this administration is saying?

General DAVIS. I don't believe so.

Senator LEVIN. And can you be more specific on one other question. You have answered Senator Nunn's questions that the strategic program we have before us provides a gradual reduction of capability over the next 5 years. That is a very, very critical statement for us, because what we are being asked to do is reduce our capability over the next 5 years in exchange for what you call better long-range capability.

But the better long-range capability that you describe is the B–1 bomber, which the administration says is an interim solution because it can't penetrate very long, and MX basing mode which the administration says is an interim solution because it is not survivable and not mobile.

So what you are saying is that we should give up, or we should adopt a program which in your words provides a gradual reduction of capability over the next 5 years, which is the window of vulnerability which we have been told about, that is the very window, and keeping the window open wider in exchange not for long-range strength, as you said this morning, but what the administration has said over and over and over again is not a long-range solution but is only an interim solution for the two reasons I have just given.

General DAVIS. I believe the statement about the interim nature of B–1 is wrong. The B–1 is not an interim solution, and the B–1 is every bit of a solution just as the B–52 was when we were coming out of B–47's. I gave a bit of litany about a number of years of experience with bombers and how one follows the other.

Now to make a very big point about further contributing to the bathtub, would you not agree that retirement of even one airplane contributes to further reduction? I, as an operational commander, would like to keep all of that capability as long as I possibly can. Certainly, by the same token, I think everybody agrees that there are fiscal constraints and problems. We have ALCM's coming in and I am not saying they completely replace all of this capability, but I am saying in the total contribution and in the strategic balance I have no argument with the decisions from a fiscal basis.

From a pure military basis I would have preferred to keep the two systems.

Senator LEVIN. The B-1 you would agree has a useful life as a penetrator for only about one-third of the useful life of the plane?

General DAVIS. I wouldn't agree to that at all.

Senator LEVIN. Well, the middle 1990's would be about 8 or 9 years into its life and it has a useful life——

General DAVIS. I would say over a third, and those are estimates.

Senator LEVIN. Your estimate is that it has a useful life for about a third of its useful life, and as a standoff capability we have the B-52's which we are not using as much as we could and we are retiring them early and phasing out the Titans.

General DAVIS. Retiring them early?

Senator LEVIN. We are retiring the B-52D's earlier than you would like?

General DAVIS. Earlier because I don't have another capability, but in truth, I am sure the Boeing engineers never thought that that airplane would be in the inventory 26 or 27 years after it was produced.

Senator LEVIN. Well, according to that, you are talking about the D's. As of last year a D had a longer life than we have now.

General DAVIS. Yes.

Senator LEVIN. We are retiring them earlier now for fiscal reasons.

General DAVIS. That is right.

Senator LEVIN. Not for engineering reasons.

General DAVIS. No.

Senator LEVIN. As far as G's and H's?

General Davis. These are not effective as those later models.

Senator LEVIN. But it is mainly for fiscal reasons that we are removing them earlier than planned a year ago.

General DAVIS. Yes.

Senator LEVIN. The B-52G's and B-52H's, according to Boeing Airframe claims, should remain sound well into the 1990's; is that correct?

General DAVIS. That is right.

Senator LEVIN. And yet you are not using all of those even in terms of cruise missile carriers, that we are only acquring 3,000 cruise missiles instead of a possible 5,000 cruise missiles which they could carry. Is that not correct?

General DAVIS. That is approximately correct. We are equipping all of the H's and about 90 of the G's.

Senator LEVIN. So as a penetrator, just to go back as a penetrator we have alternatives until we have Stealth, and everybody, even you acknowledge that Stealth would be ready in what you call now the early 1990's, but was said by Secretary Weinberger to be 1989, but was said by Ellis to be 1990.

We will take the early 1990's, and you would agree that Stealth is a better penetrator, hopefully, and that we have an alternate penetrator until then and the B-1 for only one-third of its useful life. In terms of the standoff role of the B-1 we have other alternatives which we are not even using fully, because you agree we are only acquiring 3,000 roughly instead of 5,000 crusise missiles for those B-52's.

General Davis. I thought the number was closer to 3,700.

Senator Levin. I will take the 3,700 but it could be substantially increased as a standoff bomber, is that not correct, in terms of the number of cruise missiles it carries?

General Davis. The G would last longer and we intend to keep the G in the inventory.

Senator Levin. I am saying we could put 5,000 cruise missiles on our G's and H's instead of the 3,000 we are now acquiring, approximately?

General Davis. Approximately.

Senator Levin. That means in a standoff role we have an alternative to the B–1, and we have enhanced G's and H's if you wanted to use them, and then we have Stealth to pick up that slack.

General Davis. Well, that assumes that Stealth comes in on time, and that is the same track we have been down. We have not developed a strategic bomber since the B–52 because we have been waiting on more technology. By the time you get to Stealth there may be different people in the chairs we are in but you are always looking for the better technology and you may never build another airplane.

Senator Levin. When do we expect an operational squadron of B–1s?

General Davis. 1986.

Senator Levin. That is the operational squadron we are talking about?

General Davis. Yes.

Senator Levin. Thank you.

General Davis. And 100 by 1988.

Senator Warner. I have two quick questions, and I share with Senator Nunn the observation that some of this program may well infringe on SALT I and SALT II stipulations. Am I correct that in SALT II we limit the B–1 bomber to 20 cruise missiles and plan the B–1B to carry 22 and could be modified to go as high as 30, is that correct?

General Davis. The modifications of how many it will carry I will have to take for the record as to how many.

[See questions submitted by Senator Warner.]

General Davis. And one other point on what the B–1 carries. Of course we are talking about ALCM's and gravity bombs and SRAMS, and the application there, too. As one gets into the number of MIRV'd vehicles, I think we worry about SALT limits in the 1988–89 timeframe. I am not sure it is that big a factor.

Senator Warner. The last question: From a SAC operational point of view. Would you prefer the new MX missiles be deployed in the Titan II silo or a Minuteman silo?

General Davis. Based on the studies that have been turned in, you can do it either way. I think from an operational point of view I would prefer it in the Minuteman.

Senator Warner. In the Minuteman versus the Titan?

General Davis. Yes.

Senator Exon. May I ask two questions?

Following up on what the chairman just asked you, I hope you can answer this in open session.

General, why do you prefer the MX to be deployed in Minuteman rather than Titan silos?

General DAVIS. Well, that is a twofold question. One, as best I can in open session, it has to do with hardness and soil composition; another has to do with operational range and payload distances from the objective area.

Senator EXON. Assuming Congress would not provide this $6 to $8 billion which has been estimated for hardening of the silos, would you still prefer the Minuteman holes as they are now as opposed to the Titan?

General DAVIS. Of course that requires some detailed engineering work for rattle space to get as much hardness as you can. Given that hardened silos are an interim solution, I think it is important to deploy the MX and my judgment would be to do as much as you can.

Senator EXON. I have one last question, which is more of an observation, but the General might want to respond.

We had testimony before the committee in open session by the Secretary of Defense on a recent date within the last month or so, wherein he said that in his opinion the B–1 would not be an effective penetrator beyond 1990. Now, I happen to feel that the commander of SAC probably has a better understanding of what that airplane can do than the Secretary of Defense because there seems to be about a 5-year difference in what you testified today in open session and what the Secretary of Defense testified to a month ago.

I would just say it makes it very, very difficult, General, for those of us who have to make these decisions to have the Secretary of Defense testifying that there is about a 5-year difference in the effectiveness of the B–1 as a penetrator to the man who probably has more know-how. I just wish that somehow you and the Secretary of Defense could get your act together a little bit better.

Do you have any comment on that?

General DAVIS. What can I say?

Senator EXON. Thank you very much.

Senator WARNER. Further you sayeth not.

Senator NUNN. On that point I have had several briefings at SAC and there is a fundamental difference between the expert opinion of people I respect, including General Davis, as to the capability of penetration. That seems to me, other than an economic question, to be one of the things we really have to focus on.

The difficulty I have, and this goes back many years, is we have one expert testify and they come in and totally convince us they are correct, and 4 or 5 days later we have another expert and they come in and convince us they are correct. We never isolate the differences. I think on this B–1 pentration question we really need to get General Davis back and get General Ellis, who did have a different view, and, maybe a couple more people, and really bear down altogether on this and have a panel discussion and perhaps in a closed session discuss whether the B–1 is going to penetrate and how long it is going to penetrate, and if they differ, what the differences are.

If we can isolate those differences we can make some meaningful decisions.

General DAVIS. Can I try help a little bit on that, and I think I can do it in open session testimony. An analysis, the one Senator Nunn refers to, is as good as your assumptions and as good as the material you are working with. You constantly update your data base as things happen. If one looks at analyses that make certain assumptions, such as zero ECM, that you can't keep up the technology of ECM, and ask what is the best way to penetrate, then obviously reducing the radar cross section helps immensely. It also helps you with ECM techniques.

So one has to examine what the critical assumptions are. We are all busy people, and we may not have noticed what was in the footnote in the assumption. I think to go back and do an anatomy on that cadaver to see why he died might be useful, but you should first examine what the critical assumptions are, what information was available at that point in time, what information you have now, and reasonable men come out about the same.

Senator **Warner**. Additional questions submitted by Senator Nunn will be entered in the hearing record at this point:

[Questions submitted by Senator Sam Nunn follow:]

Questions Submitted by Senator Sam Nunn

EVALUATION OF PROJECTED STRATEGIC BALANCE

Senator **Nunn**. General Davis, SAC has compared the dynamic U.S. and Soviet strategic nuclear capability of 1977 to the balance in the past several years and also projected to 1990.

I understand you recently updated portions of this analysis and are completing others. Could you trace the high points in the shifting strategic nuclear balance since 1977 and provide the results of your analysis on the current situation and projected balance between now and 1990?

In this, could you also focus on the key areas of military damage expectancy [MDE] and residual weapons under the Carter strategic plan as outlined in SAC charts in Feb 1981 and compare these to same categories under the Reagan plan?

Does the Regan plan bring us back to the 1977 level of MDE and, if so, when? How important is MDE and what systems contribute the most?

Does the Reagan plan equal or better the Carter plan in terms of residual weapons and when? If not, what is the gap and does this plan ever close it? When?

General **Davis**. Senator Nunn, we regard MDE as a dynamic measure of effectiveness because it accurately depicts warfighting capability in terms of military installation damage. Currently, bomber carried weapons contribute most to MDE against hardened targets. SLBMs, by virtue of their numbers, contribute most to MDE against softer targets. When MX is deployed in a survivable mode and as the D-5 comes on line in the early 1990s they will be effective against the full target spectrum.

In mid-1977 there was essential equivalence with an approximate [deleted] percent military damage expectancy [MDE] capability for both U.S. and Soviet forces, and with [deleted]. Our overall strategic position was projected to remain sound throughout the decade with the 1977 planned force. Later, however, due to extraordinary improvements in Soviet offensive capabilities and the cancellation and delay of key U.S. strategic programs, a window of vulnerability opened through the decade. A comparison of current 1981 alert forces shows U.S. and U.S.S.R. MDE at [deleted] percent and [deleted] percent respectively after a counterforce exchange. [Deleted.]

Comparing the Carter and Reagan strategic forces in 1990 shows that they are [deleted].

Projecting the capability of the Reagan force to the mid-1990's [deleted] providing there is no significant change in the 1990 threat estimate and no significant delays in the recommended modernization programs.

B-1 CONTRIBUTION

Senator **Nunn**. What differential in the "bathtub" or imbalance in military damage expectancy and residual weapons does the B-1 provide and in what time frames?

When does the B-1 capability begin to make a significant difference, if any, in these calculations?

General Davis. Senator Nunn, an important aspect of the B-1 is that it begins to help redress the nuclear imbalance at IOC of 1986 and continues to significantly improve MDE throughout the remainder of the decade. MDE increases by about [deleted] percent from 1985 to 1989 as a result of the B-1 contribution. The B-1 force reduces Soviet residuals after a counterforce exchange by [deleted] less than MX in MPS. Nonetheless, it does draw down Soviet residuals by [deleted] weapons more than if we did not have either MX/MPS or B-1.

IMPACT OF B-52D AND TITAN II RETIREMENTS

Senator Nunn. In terms of your responsibilities under the SIOP and with the Joint Strategic Targeting Center at SAC, what problems or adjustments are you having to make to the SIOP with the proposed retirements of the B-52D and the Titan IIs?

Will these retirements result in reduced target coverage and megatonnage available or are there programs to recover this capability? What are they and how do they relate to the retirement schedule?

What programs will make up the shortfall of the three B-52D squadrons being phased out in Fiscal Year 1982? In other words, are we in the process of decreasing our strategic capability before we have any replacements?

General Davis. Phasing out the B-52D and Titan will result in fewer weapons committed to the SIOP, reduced target coverage and less magatonnage, but there are things we can do to lessen the impact. As the result of a review by the Joint Strategic Target Planning Staff (JSTPS), the Strategic Air Command Force Commitment was revised and the target list prioritized to reflect the reductions.

An option would be to increase our B-52G/H bomber alert rate in numbers of bombers prepared for immediate launch. An increase in alert rate would require additional aircrews for the G & H units which could be accommodated by personnel from the retiring "D" units. However, this would require an increase in G & H flying hours to support the additional aircrews. There are not sufficient supplies and spares on hand to support a flying hour increase, and due to long lead-time, it is estimated that it would be 1985 before they would be available. This option would partially offset the number of lost alert weapons due to "D" model retirement.

Other systems such as ALCM and Trident will provide additional weapons as they come on line, and the B-1 will preserve the flexibility inherent in a manned penetrator.

ACCELERATED STUDY OF MX

Senator Nunn. I understand that the current plan is to complete studies and analysis of the follow-on basing options for the MX by 1984. In your view, could this process be accelerated to provide a decision much earlier if the proper funding and mandate was provided?

In your view, do you believe a "permanent" decision on basing the MX should be put off until 1984?

General Davis. The Ballistic Missile Office advises us that it would not be wise to accelerate the decision process on the President's options. We are planning on a DSARC II in 1984 and increased funding would still not allow us to progress to a point where risks would be reduced to an acceptable level. An early decision would be based on "paper studies" and not involve the proper level of contractor support. From a military viewpoint, it is essential that we aggressively pursue selection of a final survivable MX basing plan. We will accelerate that process all we can.

In the meantime, interim deployment in ICBM silos serves several important purposes. First, it signals our resolve and places the Soviet ICBM force at risk, which could aid the SAL negotiation process. Second, it increases Soviet uncertainty about the outcome of an attack and could significantly increase our surviving capability if the projected threat does not materialize. Finally, it is compatible with follow-on ballistic missile defense, one of the proposed long-term solutions.

CHANGES TO PD-59

Senator Nunn. I understand that some changes in PD-59 have just been approved by President Reagan. Are you in a position to discuss in general terms what those changes include?

What are your constraining factors, if any, in carrying out the dictates of PD-59 both as directed under President Carter and under the revisions by President Reagan?

General **Davis**. The Carter administration never forwarded PD–59 to the major air command level nor to the Joint Strategic Target Planning Staff. However, the dictates of PD–59 are reflected in both the Nuclear Weapon Employment Policy and the Joint Strategic Capabilities Plan. No changes in these documents resulting from President Reagan's review have yet reached me.

The prevailing guidance, however, provides for many challenges to expand the flexibility and responsiveness of strategic forces. This is particularly true with regard to [deleted] and the requirement to develop near-term capabilities for the conduct of protracted conflict. Today's overall capabilities to respond to those challenges are very limited. Our forces inherently possess some of the capabilities required, but are constrained by shortfalls in the endurance of in-being C^3I systems. The President's strategic program is designed to correct these deficiencies in our forces and supporting C^3I.

SHIFTING MX FROM MPS TO SILO BASING

Senator **Nunn**. In early February, I asked General Ellis his views during the strategic hearings as to what effect on the dynamic counter military potential or military damage expectancy calculations shifting the MX missile from the MPS deployment to silo basing would have. I would like your analysis of the same question.

General **Davis**. Senator Nunn, in most dynamic analysis, including ours, U.S. force capabilities are measured after riding out a Soviet first strike. Since Soviet forces are becoming increasingly capable against our silos, the contribution of silo-based ICBMs to these dynamic indices is rapidly diminishing. Therefore, shifting MX from MPS to silo basing significantly reduces all dynamic measures of merit including counter-military potential and military damage expectancy.

The value of MX in silos lies in more subtle, but equally important measures: it sends a signal to the Soviets that they will not be allowed to deny us the use of the most efficient element of our strategic forces; it maintains the essential and unique characteristics of today's ICBM while providing the capability to place at risk hardened and time sensitive Soviet targets which are now in virtual sanctuary; and if deployed in sufficient numbers, it enhances stability and deterrence by substantially increasing the risk to the Soviets of an unsuccessful

attack. In combination, these factors may encourage the Soviets to pursue

attack. In combination, these factors may encourage the Soviets to pursue mutually advantageous strategic arms limitations.

MODERNIZATION OF SAC'S TANKER FORCE

Senator **Nunn**. My understanding of testimony of the past several years, especially SAC's, was that the tanker and refueling shortfall was becoming increasingly severe. How important are the KC–135 reengining program and the KC–10 program which the administration recommended discontinuing?

General **Davis**. Modernization of SAC's tanker force is one of the Air Force's highest priorities. As you correctly noted, the air refueling shortfall has been of deep concern for several years. For example, KC–135s are integral to the SIOP. Today, [deleted] percent of the bomber force is limited in SIOP effective due to inadequate air refueling availability. This condition will be exacerbated by the [deleted] will incure. In addition, tanker support for general purpose airlift and fighter requirements will also increase overtime. DOD planned enhancements to U.S. force projection capabilities cannot be fully attained without commensurate increases in aerial refueling capabilities. Of particular concern is the requirement to responsively deploy and employ our Rapid Deployment Joint Task Force, a formidable mission under the best of circumstances. Suffice it to say that the Air Force will continue to operate through this decade with a shortfall of [deleted] or more KC–135 equivalents unless aggressive steps are taken to modernize the tanker force.

The Air Force is responding to this challenge in a positive way within the context of fiscal realities and overall strategic force modernization. The current Five Year Defense Program will reengine [deleted] KC–135s with high technology engines which will provide increased capability equivalent to the addition of over 120 tankers. In addition, fuel savings and avoidance of the costs associated with maintaining the older engines will result in significant out-year savings. The KC–10 is being procured specifically to support general purpose users. This unique cargo-tanker aircraft provides an outstanding opportunity to increase both airlift and aerial refueling while incurring minimal R.D.T. & E. risk and expense.

SAC MARITIME MISSIONS

Senator **Nunn**. What role can or should SAC play in respect to maritime missions to assist the U.S. Navy? Would you assign any capabilities to a B-1 variant in a maritime role? Do you think that Air Force capabilities should be included when calculating the U.S.-Soviet naval balance of power?

General **Davis**. Senator Nunn, SAC has three collateral responsibilities in support of Navy objectives: aerial minelaying, conducting antisubmarine warfare and protecting shipping, and interdicting enemy sea power through air operations. While the B-1 could make a significant contribution to these conventional missions in the future, our immediate need for it is as a strategic asset.

Air Force capabilities should be considered when calculating the U.S.-Soviet naval balance of power, but it must be understood that the availability of SAC forces for maritime support will be dependent upon the primary commitments of the SIOP forces.

Given the proper tactical situation, our aerial minelaying can be a most effective deterrent and political tool. However, our sea power interdiction capability is [deleted].

REAGAN CRUISE MISSILE PROGRAM

Senator **Nunn**. There appears to be some confusion to the air-launched cruise missile plans of the Reagan administration. Do you have any comparative analysis of the cruise missile plans of the Carter and Reagan administrations to include timeframes and platforms. When will the Reagan plan have over 3,000 ALCMs deployed and when would the previous programs have provided the same capability?

General **Davis**. The ALCM program under the Reagan administration is more comprehensive than the past administration's plan. The current plan deploys [deleted] PAA ALCM by fiscal year [deleted] on [deleted].

The Carter administration plan would have deployed 3020 PAA ALCM on 151 B-52G aircraft only with an option for deploying the ALCM on the B-52H. We anticipate that the current program will deploy [deleted] ALCM by fiscal year [deleted] vice fiscal year [deleted] for the Carter administration.

MPS-87

Senator **Nunn**. What are the differences now in the SAC view of the MPS-87 analysis of radar cross sections and penetration as compared to that presented by General Ellis prior to his retirement?

Could you provide for the record whether or not the SAC MPS-87 briefing included in their assumptions and calculations the results of the B-1 penetration evaluation as they were known at the time? In other words did the MPS-87 analysis totally overlook these results or were they a factor in their analysis?

Could you also provide for the record the MPS-87 briefing as it existed in July, 1981 in chart form with sufficient text and where you would agree or disagree?

General **Davis**. The MPS analysis as presented by General Ellis took a very conservative view of ECM in the 1990s. That is, it was assumed in MPS-87 that the level of ECM effectiveness could in the out years not be determined with confidence and therefore very low radar cross section without ECM dependency was the better choice. I have great confidence that ECM will be effective, particularly in combination with reduced B-1 radar cross section. Final results of the Bomber Penetration Evaluation and Featured ECM trials [deleted] conclusively indicate that baseline B-1B ECM will [deleted].

The MPS-87 briefing as it existed in July 1981 did not include results of the Bomber Penetration Evaluation (BPE). It is also important to note the Featured ECM Trials [deleted] were conducted well after the February 1981 completion of the MPS-87 study. Once again, the final analysis of these ECM tests reinforces high confidence in the B-1B ECM suite and supports the conclusion that the B-1B will be an effective penetrator well into the 1990s. I, however, recognize B-1B will be an effective penetrator well into the 1990s. I, however, recognize the longer term value of further reductions in radar cross section. The ATB, besides being a highly effective penetrator on its own, will also provide a force multiplier effect for continued effectiveness of B-1 penetration throughout the 1990s, thereby giving added value to our 1980s investment in the B-1B.

The MPS-87 briefing has been presented in various levels of detail and many defferent versions exist. Scripted briefing charts on such a technical topic are often subject to misinterpretation and we have therefore refrained from that type of format. I believe a better approach would be an informal discussion of MPS-87 with you and your staff.

JOINT OSD/AIR FORCE BOMBER ALTERNATIVES STUDY

Senator **Nunn**. In the joint OSD/Air Force Bomber Evaluation Study, it stated that the long-range combat aircraft capability to replace the B-52 cruise missile carrier aircraft force was also evaluated. What were the results of that evaluation and is it your opinion that the B-1 will ultimately end up being our main cruise missile carrier?

How many B-1s would be in a CMC role and how many would be available for conventional applications?

General **Davis**. The Joint OSD/Air Force Bomber Alternatives Study concluded that the B-1 Variant was the most promising of the candidates considered as a replacement for the B-52 in the cruise missile carrier (CMC) role. Although the force structures assumed in the study differ in some respect from the recent Presidential decision, we regard the basic conclusion as valid. Our plans call for an eventual transition of the B–1B to the CMC mission as B–52s are retired and Advanced Technology Bombers (ATBs) become available for the penetration role. The actual number of B–1Bs that would be used in a conventional or CMC role will depend on the evolution of the total structure.

The primary study participants at OSD and HQ USAF could provide more detail on the study results.

Senator **Warner**. We will now go into closed session.

[Whereupon, at 11:50 a.m. the subcommittee proceeded in closed session.]

EXECUTIVE SESSION

Senator **Warner**. Are you prepared to represent to the Chair that all persons in this room have the proper clearances to enter into closed session?

We are now prepared to go into closed session.

You may have an additional statement, but at this time I would like to defer to Senator Jackson who may wish to make observations, and then go into questions before we get into that.

Senator **Jackson**. I would like to get answers to a couple of questions. I have watched these arguments over the years and I supported the B–52 program when it was said that all we needed, of course, was the Atlas and the Titan and so on. I did it for the reason that it would complicate the Soviet problem, that they would have to invest billions in air defense, and I think it has basically paid off.

I listened to all of the arguments that a B–52 is going to be out of date, and I realize it has a life expectancy of some termination point.

Then we got into the B–70 argument, and we canceled that.

I guess where I come down right now is that I am not convinced that the difference here in penetration in the time-frame we are talking about between the B–1 and the B–52G's' and B–52Hs armed with ALCM's is worth that difference.

When you have a budget limitation to face, we are not taking, it seems to me, a big risk, when you get down to it.

Could you just outline specifically the relative differences in view of the fact that we are asked to invest as we do here on the MX missile itself? That is where I come down, and I have listened to all of it—the B–52 is going to be dead, but technology has extended the ability to penetrate.

As a layman, I question seriously, General, the ability of bomber penetration, and I don't even know whether it is wise to occur in the Asian land mass, or whether we are better off really pushing hard on the low profile radar of Stealth technology in this interim until we get Stealth.

The cruise missile simply complicates the Soviet problem from one end to the other, and this gets down to the philosophical question: What really deters the Soviets?

I don't believe that they really want to get into a nuclear conflict. I think their doctrine basically is one in which they hope to achieve their objective is hegemony by the application, real or perceived, of this military strategic advantage that they have built up, and use it to achieve specific political and diplomatic objectives.

I think a Soviet commander is pretty cautious basically. They only move when they see the door wide open and they have a real chance of doing it. That is on the military side.

My worry, of course, in all of this accumulation of military power, I guess, gets down to the questions of their willingness to take greater and greater risks on the political side, and that an American President will not have confidence to be tougher because he may feel that he doesn't have the ability in a showdown to deter.

So, we are playing a great political game and where these weapon systems fit in those scenarios is very important, in my thinking.

So, it would be helpful if we can get down to specifically what is the relative difference in this critical timeframe. We can't discuss Stealth in this room and, in fact, the operational tapes have been held so closely, I am just appalled by what happened here when the DOD started giving out dates, and some of us were not even allowed to say we had ever heard of it.

General DAVIS. On that point, there will be a detailed briefing on ATB this afternoon by Dick DeLauer and Kelly Burke.

But responding to your question—and it was a good tour of the horizon of where we have been—and we talked about the B-52's ability to penetrate, and thank God we have the B-52. I cut my teeth on them.

The fact of the matter is, it has a very large radar cross section and [deleted] that you can't conceal it well enough to affect its ability to penetrate. The difference in the B-1——

Senator JACKSON. Right there, do we have to physically penetrate in order to provide the deterrent?

General DAVIS. Yes.

Senator JACKSON. Why not stand off and as we improve our cruise missile technology——

General DAVIS. When you do that, you invite a defense against the cruise missile only. Now, he invests all of that money in defense against airplanes and cruise missiles. [Deleted.]

Senator JACKSON. You can have longer and longer long-range interceptors, if you are doing it on a standoff basis, you can have longer and longer long-range interceptors.

General DAVIS. And he could put some SAM's on surface ships or submarines. He could do a lot of things.

Senator JACKSON. He can do a lot of things, but you really force him into a really defensive mode where he has to put more and more of his resources. Those who said we didn't need a bomber in the late fifties after the advent of the missile, in reflection, of course, the Soviets have spent over $100 billion in air defense just to deal with the B-52; is that right?

General DAVIS. Sure; at least that, and thank God we had some

B-52's with a capability to carry a lot of conventional armaments for force projection around the world.

The question, the key question, at least as I get it from you, is why go with a B-1 and why not go straight to advanced technology bomber since the IOC's are so close?

That is a fair question.

There are portions of the Stealth program that are still a ways out there in development and, hopefully, you will get those this afternoon.

Senator JACKSON. What is the real difference between the penetration capability of the B-52 and the B-1 in terms of (*a*) not using the ALCM and (*b*) using it? You have B-52's taking off on a specific mission and a B-1 taking off on a specific mission, armed with the goal of launching ALCM's, what is the really gut difference?

General DAVIS. In terms of what?

Senator JACKSON. Of carrying out the mission and achieving the goal or the targets.

General DAVIS. If B-52 is strictly a cruise-missile carrier, and it stands off and launches, and the cruise missile, has a range of [deleted]. You can, with the B-52H, [deleted] with our best estimates. You penetrate with a great deal of capability with the B-1. We can't [deleted] send the B-52 into the highly defended areas beyond late 1980's. We just can't do that.

For really hard-target kill capability you need to get an airplane in there with its weapons.

Senator JACKSON. But, General, in all seriousness if you are going to use the bombers, in effect, as a first-strike capability, our people are really going backward. You are going for empty silos. I am talking about really hard targets. I assume you are talking about missile silos and how in the world are you going to program a targeting arrangement by which you would send B-52's or B-1's or any bomber against a missile silo? That has to be done, it would seem to me, basically, with whatever missile capability we have.

[Deleted.]

I just don't see that.

General DAVIS. [Deleted.]

Senator JACKSON. I understand that, but they don't need to fire all of their land-based systems to knock out our means of a second strike; isn't that correct? They have got enough in reserve now for knocking out our retaliatory forces, our second-strike force, and I just don't follow that doctrine.

Surely, there will be some hard targets left, submarines and things of that kind.

General DAVIS. And troops in garrison and imprecisely located targets, in addition to fixed, immobile targets.

Senator NUNN. Why couldn't these be targeted with cruise missiles?

General DAVIS [Deleted.]

Senator JACKSON. Well, as to the range you are talking about, the cruise missile can go out with a payload—and I am talking about the mid-1980's—with what, 5,000 or 6,000 effective miles?

General DAVIS. No.

Senator JACKSON. An ALCM?

General DAVIS. No; we are talking about 1,500 miles.

Senator JACKSON. Well, I don't know, but 1,500 miles on the periphery of the Soviets will get most everything.

General DAVIS. We are talking about an avenue of launch which is principally [deleted]. Remember, I said you are not launching [deleted]; the cruise missile has limitations, it has a good capability and it will get better, but it is not the be-all and end-all.

Senator JACKSON. I don't disagree on that, but it does seem to me that the opportunity here with an all-out development program on both the cruise and the Stealth technology, which we will get to this afternoon, can make the difference.

I sat around here when they argued that we couldn't get the missile program going, and I worked with Benny Schriver, and they pooh-poohed all of it.

General DAVIS. And we went through several alterations.

Senator JACKSON. We always do that.

General DAVIS. And the next generation of airplanes. I realize there are a lot of things we don't know, and there are a lot, but the fact is that we will have more and more difficulty with the B-52 penetrating and surviving, and the next logical step, as the B-52 followed the B-47, is the B-1. There are a lot of unknowns with the Stealth technology in terms of [deleted] and other things that we just don't know, Senator.

If we wait to get that technology—and that is the other point—we may never build another airplane.

Senator JACKSON. Thank you.

Senator WARNER. We have a problem, in that some of us are attending a luncheon for King Hussein, which began 8 minutes ago. Did you want to make a statement?

General DAVIS. I wanted an opportunity to make the points on the charts, the comparative analysis that has been passed out, in terms of the strategic force balance.

I start with a chart you are all familiar with, the mid-1977 level, wherein the United States had a [deleted] capability versus the Soviets' [deleted] capability in terms of military damage expectancy and there was a favorable balance in terms of residual weapons.

Through the period of 1977 through 1989, the United States maintains a favorable position.

As to what occurs after that, of course, there was a delay in modernization—and I am now on figure 2—delaying the operational employment of Trident, MX, ALCM, as well as canceling the B-1. Then there was a significant change in the national intelligence estimate in 1978. That caused the U.S. capability in terms of a counterforce exchange to go from that favorable position of strategic parity in the mid-1977 level to a quite precipitous dip, and we end up on the short end of the residual weapons.

Then we look at the 1980 force with MX, with 200 MX, and no B-1 and 4,600 MPS. Look at that balance on figure 4 and you [deleted].

This is in terms of residual weapons, and figure 4 has no MX.

Then we get to—well, what does the President's force provide? And now I take you to figure 6 which includes 100 B-1's versus 200 MX and 4,600 MPS. You arrive at about the same point, in terms of military damage principally because of the B-1 and its ability to penetrate. In terms of residual weapons, you have a greater disparity, a significantly greater disparity, than you did with MX in 4,600 shelters, principally because you lose the exchange ratio against the 4,600 sites, which caused a drawdown of the residual weapons, and you had some target kill.

The final figure is what you get without B–1. What you get without the B–1 is not a very good picture; that is, if one cancels the B–1 or says let us delay the B–1 until we get ATB.

That is the picture. That is going through it very quickly in the interest of time. I will leave it with you and, of course, the staff is going to examine it and we will be happy to answer questions.

[Prepared statement of General Davis, consisting of opening statement and comparative strategic force analysis retained in committee files.]

Senator WARNER. Thank you, General.

I will turn to my colleagues now, rather than ask questions myself.

Senator EXON. Thank you, Mr. Chairman.

General, I appreciate the fact that you have been through this very rapidly and I am not familiar with all of these charts, even though you may have assumed that I was. I guess one thing which struck me—we went through these rather briefly—is this: Is it not true that with the elimination of the MPS system for MX basing we have [deleted]?

General DAVIS. That is right, and we would not have reached that point even with 200 MX in 4,600 shelters; that is, without the B–1.

Senator EXON. Are you telling me that substituting the B–1 for the MPS basing mode of the MX gets us to essentially the same place?

General DAVIS. Yes, sir; that is what I am telling you.

Senator EXON. Mr. Chairman, that is totally amazing and I think this is one of the things that we must definitely look into. Because if that were true, then why was there a total all-out push for the Air Force, saying how important MPS was as far as the MX was concerned? Why didn't we drop that and go to the B–1, which certainly from my knowledge would have indicated we could have gone for it without the same unsatisfactory budget impact. Can you explain that?

General DAVIS. In terms of war-fighting, that is, military damage expectancy [deleted]. In my explanation of the difference in war sustaining, that is, residual weapons left, there is quite a disparity. [Deleted] in terms of war sustaining; that is absolutely correct. That is what the chart shows and that was the quick point I made when I was walking through the analysis, very quickly.

Senator EXON. I have no further questions at this time, Mr. Chairman.

Senator LEVIN. The Secretary of the Air Force earlier this year gave us a chart and it shows that the B–1 begins to decline in penetration capability in 1988. Have you seen that chart?

General DAVIS. No, sir, I haven't.

Senator LEVIN. Well, I would like to make this chart a part of the record, Mr. Chairman.

General DAVIS. I have seen some charts. This was a part of a SAC study, [deleted] and did not have available to it at that time the results of the very important bomber penetration evaluation which was done with the B–1 [deleted].

Senator LEVIN. This was given to us in June. Shouldn't that have included both of these items?

General Davis. Apparently not, Senator Levin. The bomber penetration evaluation was concluded in April, and the results by AFTEC were not generally available until sometime in June. It is in the Air Force/OSD bomber penetration study; it is not clear that if it was available for Strategic Air Command that they used it or if it was not available.

Senator Levin. Can we ask the Secretary of the Air Force if this chart which we will make a part of the record included the items which the general has just enumerated, so we can clarify that?

Senator Warner. If the Senator can introduce it for the record. If the Senator will ask the question, we will put it in the record and get the answer. Could the witness see the chart?

Senator Levin. Surely.

[Document shown to General Davis.]

General Davis. This looks like a computer-generated product and could I ask the Senator what, again, was the point of this?

Senator Levin. You will see there the dotted line which shows the end of the penetration capability of the B–1 begins in 1988 and ends in 1990. Then you have a shoot and penetrate after 1990, which I think Senator Jackson was getting to.

Does the B–1 penetrate for 3 or 4 years before it degrades, or does it decline for a sixth of its useful life, or a third of its useful life? Neither one of those factions inspire a lot of confidence, but those are very critical dates and that shows the beginning of the degraded penetration beginning in 1988 and it can no longer penetrate in 1990.

General Davis. I don't think that is what the chart says; it really doesn't say that. There is a dotted line on there and it does not say "shoot and penetrate" out here, and there is just a dotted line.

Senator Levin. There is "S and P".

General Davis. That is written in ink.

Senator Levin. Let us do this: I think the chart is clear and let us send it to the Secretary of the Air Force and ask him if that is what he means.

Senator Warner. Could a copy be made available to the witness so that he could give it further consideration and file in the record? Any further response you wish to make to it, Senator?

General Davis. I will be happy to. Would it be inappropriate to ask for the whole briefing, the whole set of charts, since they have them there?

Senator Levin. We will get you what we can on that.

[Additional information follows:]

COMMENTS ON BOMBER FORCE STRUCTURE CHART

The study from which these charts were extracted is now outdated. The issues which the study attempted to illuminate were resolved with the announcement of President Reagan's strategic program on 2 October 1981. Our force structure planning and phasing are now in accordance with that program, and the options portrayed on the charts are invalid.

In addition, Senator Levin's remarks indicate that he may have misinterpreted the chart. The dashed line indicating B–1B transition to shoot-and-penetrate in the 1988 to 1990 time period does not mean that the B–1B will no longer penetrate. The primary role of the B–1B will still be as a penetrator. Externally mounted ALCM will serve as an adjunct to maximize carriage and delivery of weapons. The current plan calls for the B–1B to replace the B–52G in a pure ALCM standoff role in the mid to late 1990s after ATB aircraft become available in numbers.

Senator LEVIN. The next question has to do with your figure 7 on your charts. This says the planned force without B–1. This is the chart which you made reference to and I would like to ask you what assumptions you made. Does that assume the early B–52 retirement?

General DAVIS. Yes.

Senator LEVIN. Does that assume ALCM's on the B–52's?

General DAVIS. Yes.

Senator LEVIN. How many?

General DAVIS. This program is for 3,700 total. But, of course this is the alert case, so only about [deleted] of that number affects the outcome.

Senator LEVIN. You have indicated earlier this morning that you thought that could go up as high as 5,000 with additional funding on the B–52's?

General DAVIS. No, I answered the question, could you go, and I didn't say that you should.

Senator LEVIN. You said it could go up?

General DAVIS. Well, I think that is a judgment best left to the guys who do it for a living.

Senator LEVIN. But it was on a fiscal basis?

General DAVIS. Rather than doing a war game; anybody can do a war game, but the people who do war games are people who are in that business as a professional pursuit. I don't know what you are talking about if it is not a war game.

Senator LEVIN. Let us talk about your figure. How many ALCM's did you assume? If you assume 5,000 ALCM's, which you said could be done, engineeringwise, it is only a fiscal problem, and that chart would change?

General DAVS. Yes, not much, but it would change maybe one degree.

Senator LEVIN. Does this chart assume the Titan retirement?

General DAVIS. Yes.

General LEVIN. Whether it is one degree or another, this chart would be more favorable to us?

General DAVIS. Senator, it would be hardly perceptible.

There would be a change but it would be very small.

Senator LEVIN. Can you give us a chart which assumes the following, if you would: With no B–52D early retirement and 5,000 ALCM's on the G's and H's instead of the 3,700?

General DAVIS. Let me make sure I get all of this in order.

Now, there is no B–52 and no Titan retirement and assume 5,000 ALCM's; is that what you are after?

Senator LEVIN. On the G's and H's, instead of the 3,700.

General DAVIS. All right.

Senator LEVIN. Since we are in executive session, let me say something to you which is really relating to a letter that I sent to you. I asked you for certain information which is very similar to the figures which we have been supplied today, and you indicated that I should look elsewhere essentially for them. I am wondering if you would review your position on that? I think, as the chairman said earlier this morning, we do look to you for independent analysis and your predecessor was very good about that, and we have no reason to believe that you are going to be any less effective and open than he was about that kind of independent assessment. I frankly was very disappointed in your response, which took months to get to me, which essentially referred me to another agency and another part of the DOD.

In any event, would you reconsider my request to you in the light of the fact that you did produce similar information today, and in light of the fact that General Ellis would have produced this for me, he said but for the fact that he retired he didn't want to produce it because he didn't have quite enough time before retirement and he suggested that I ask his successor to give me the information?

I was a little put off when it took months to get an answer, and then referring me to another part of the DOD.

Would you re-evaluate your response?

General DAVIS. It did not take months for you to get my response. My response came to you in a couple of weeks. I believe the disconnect may have been the fact that it was a verbal request to the Secretary of the Air Force and transmitted to me. In examining the request, it appeared it was a thrust and counterthrust, and while I do that for internal information, the Studies and Analysis and Gaming Agency in the JCS are indeed the owners of the so-called RISOP, R-I-S-O-P. Certainly, I will take a look and perhaps we could get together and decide what I can and can't provide you, Senator.

Senator LEVIN. Thank you. And I will submit a copy of this request to the Chair to see if it is appropriate that it be made a committee request to you, and if it is not appropriate——

Senator WARNER. I think it is appropriate and it will be done.

Thank you, General, for your insight and professionalism which has been helpful to this committee, and I thank your colleagues, and I anticipate we may invite you back again for that panel discussion contemplated by Senator Nunn and others.

General DAVIS. I would be happy to respond and I thank you, Senator.

Senator WARNER. There will be further questions for the record.

[Questions with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JOHN W. WARNER

B-1B ALCM CARRIAGE UNDER SALT

Senator WARNER. Am I correct in SALT II we limit the B-1 bomber to 20 cruise missiles and plan the B-1B will carry 22 and could be modified to go as high as 30?

General DAVIS. You are correct, Senator Warner. SALT II Treaty provisions specifically prohibit equipping bombers with a capability for more than 20 cruise missiles. Although design options are available that could increase B-1 ALCM carriage beyond that number if the Nation decides to disregard SALT II, we will naturally abide by treaty limitations in our final design.

B-1 LOADING

Senator WARNER. SALT II limited the B-1 bomber to 20 cruise missiles. The planned B-1B would carry 22 and could be modified to carry 30. Has the administration factored SALT II into its consideration about cruise missile loadouts on the B-1?

General DAVIS. As you know Senator Warner, even though SALT II has not been ratified, the United States has indicated it will take no unilateral action that would undercut treaty agreements so long as the Soviet Union exercises the same restraint.

If future arms control initiatives result in a modified SALT II or, include some present provisions and limits as part of a "START" agreement, we will certainly abide by those limits to the letter.

B-1 CONCEPT OF OPERATIONS

Senator **Warner**. What is the current SAC plan for promoting endurancy in the B-1 in terms of pre-launch survivability?

At how many bases would the B-1 be deployed in peacetime?

How many dispersal bases would be maintained and what level of support would be involved at these bases?

Do you envision launching unarmed B-1s in order to flush them on warning before an attack takes place to be married up with weapons, POL, etc., elsewhere?

General **Davis**. Senator Warner, B-1B prelaunch survivability will be promoted through the aircraft's design and peacetime basing plans.

The B-1B is designed for quick cockpit entry, self-contained engine start and rapid acceleration and flyout speeds to allow base escape in minimum time. In addition, the aircraft is hardened against nuclear effects such as blast, radiation and electromagnetic pulse to enhance its ability to survive nuclear attack.

The peacetime basing plan is designed to optimize pre-launch survivability and base escape. The current plan to base the B-1 at [deleted] central U.S. bases to provide maximum warning time in the event of attack by ICBMs and/or SLBMs will also contribute to survivability. If factors such as threat, warning time, etc., require B-1 dispersal, we will develop plans similar to those for the B-52.

Given sufficient warning time, we could launch our aircraft, armed or unarmed, and marry them up with dispersed weapons, POL, etc., based on post-attack assessment of surviving airfields and other resources. However, whenever possible we would prefer to launch aircraft in a fully generated armed status.

B-1 TACTICS

Senator **Warner**. Is your chart describing the contribution of the B-1 predicated upon a concept of operations that involves multiple stand-off attacks against the Soviet Union followed by a penetrating mission?

Is such a concept of operations part of the SAC plan for utilizing the B-1?

What do you think of such a concept of operation?

General **Davis**. Senator, the chart you refer to is based on a [deleted]. As we envision it, [deleted]. ALCMs, whether launched from standoff or shoot-and-penetrate aircraft, will also aid penetration through saturation of remaining defenses.

The B-1B is designed as a penetrator and we plan to use it in that role at least until a successor penetrating bomber is deployed because of the unique and important capabilities a manned penetrator contributed to the Triad. Although we expect that the B-1B will eventually take over the shoot-and-penetrate and standoff roles as its successor is deployed, our concept of operations is to deploy it as a penetrator.

MOBILE TARGETS

Senator **Warner**. In addressing the requirement for a penetrating aircraft, you alluded to the need to be able to target mobile systems. What targets do you currently consider would fall into this category; how important is their destruction to the success of the SIOP; and how are you planning to provide the necessary real-time C^3I—especially reconstitutable C^3I—needed to make it work?

General **Davis**. The mobile systems I alluded to in my presentation cover a broad range of movable or imprecisely located targets. [Deleted.] In addition, to have a true warfighting capability, we must be able to engage enemy force formations [deleted] at their fixed garrisons, home fields or ports, [deleted.]

We cannot let the enemy find a sanctuary for his critical forces [deleted]. A penetrating bomber has the flexibility to locate and destroy that important category of targets.

On September 1, my staff completed and forwarded the "Post-1987 Strategic Bomber C^3I Requirements Study." This study defined our requirements and emphasized C^3I survivability, endurability and flexibility. [Deleted.]

RECENT B-52 CRASH

Senator **Warner**. What does your initial evaluation tell you was the cause of last week's crash of the B-52D exercising on low level flight?

General **Davis**. Senator Warner, I have been informed of the preliminary findings of the mishap broad. However, the only person authorized to release those findings is the Commander, Air Force Inspection and Safety Center at

Norton AFB, California. We have contacted the Air Force Legislative Liaison office and requested that they ask him to provide you an answer as soon as possible.

C^3 CONNECTIVITY

Senator **Warner**. I am pleased to hear of your support for improving our connectivity with our strategic forces.

Specifically, what concerns do you have about the ability of our C^3 network to, as you put it, "keep abreast of follow-on weapon systems?"

General **Davis**. One significant characteristic of our follow-on weapon systems will be their flexibility. To capitalize on that flexibility, we need very sophisticated C^3 systems that allow us to control these weapon systems through all phases of combat. For example, we need to be able to assess our own residual capabilities as well as those of the enemy and replan available sorties with updated target information. That calls for survivable and enduring very high-speed communication links and high-capacity data processing equipment. The programed C^3 network should help satisfy our communications requirements for command and control of these follow-on weapon systems. Although we are working to further define these requirements, [deleted.] Also, I am concerned about the lack of a single agency with authority to manage our C^3 program architecture. Without such an agency our C^3 network will quickly fall behind new weapon systems developments.

C^3 PRIORITIES

Senator **Warner**. What do you as CINC/SAC regard to be the highest priority improvement needed in our command, control and communications system?

Do you regard the decision to defer attack assessment improvements as a desirable and/or necessary policy outcome given the other important C^3 modernizations which must be addressed and the funding constraints under which we must operate?

General **Davis**. As CINCSAC, I believe the [deleted]. This link must allow CINCNORAD to receive the output of the warning systems, accurately characterize the nature of the attack and provide this information to the NCA, and allow the NCA to decide on and transmit an appropriate response to SIOP units to enhance their ability to survive.

The decision to defer attack assessment improvements may be necessary economically, but from an operational viewpoint it certainly is not desirable. There is a fine line between the information needed for tactical warning and that needed for attack assessment. [Deleted.] These improvements would also overcome operational deficiences that adversely affect wartime decision making.

STRATEGIC C^3

Senator **Warner**. What is your view of the endurancy of the Soviet C^3 system? What importance do you attach to achieving greater endurancy in our strategic C^3 system? To what degree given the fiscal constraints we have to live within, is it likely that we can ever acquire the necessary endurancy?

General **Davis**. Soviet doctrine emphasizes centralized control, survivability, redundancy and flexibility within the system, and they have developed extensive and modern command, control and communications systems to support that doctrine. [Deleted.]

Endurance of our strategic C^3 systems is absolutely essential to our ability to provide the NCA the option of flexible response through all levels of conflict. Without enduring C^3 systems, we are greatly limited in the areas of force reconstitution, post-attack recovery, replanning of targets and re-execution of sorties. C^3 systems now in planning or development will help resolve the most serious problems. Although it is obviously not easy to achieve all of our goals, we can make significant progress within the constraints of fiscal reality.

GPS

Senator **Warner**. To what degree does the decision of the House-Senate conferees to defer procurement of the GPS Satellite System—which would be the host constellation for the IONDS Nuclear Detection System—affect your ability to perform your mission?

Do you support the deployment of this system at the earliest possible date?

General **Davis**. Deferred procurement of satellites will delay worldwide three-dimensional coverage until fiscal year 1989. GPS/IONDS is one of SAC's top space programs and we encourage the earliest possible deployment of this system. When available, this system will greatly improve our ability to redirect forces, update our navigation systems, rendezvous equipped tankers on a radar-silent basis, and maximize training route flexibility using self-contained bomb scoring. It also provides a common time and coordinate system for all U.S. and allied forces.

DYAD VERSUS TRIAD

Senator **Warner**. To what degree do you see the development of a hard-target-kill-capable missile, the D–5, combined with the decisions relating to MX basing, as leading the United States in the direction of a reliance on a strategic DYAD?

General **Davis**. I do not view the President's strategic force package as a move toward a DYAD. Initial deployment of the MX will strengthen the existing ICBM leg of the Triad, and the eventual deployment of an ICBM in a survivable basing mode will further increase the diversity and warfighting capability of our strategic forces. I welcome the development of a hard target capable SLBM, [deleted] SLBMs and ICBMs have always been complementary weapons—each has important advantages which the other does not possess. ICBMs have extremely rapid and reliable connectivity and continuous near 100 percent alert rates. SLBMs, on the other hand, are currently our most survivable Triad leg. As in the past, maintaining a Triad of systems provides a hedge against the enemy suddenly placing our retaliatory capability in jeopardy by some unforeseen technical breakthrough. Improving the capability of one system doesn't mean we can do without the others.

PROMPTNESS

Senator **Warner**. In your capacity as Director of the Joint Strategic Target Planning Staff, what importance do you attach to acquiring additional numbers of non-prompt hard-target kill systems such as SLCMs or ALCMs? Do these systems substitute for prompt delivery systems such as MX?

General **Davis**. When the JSTPS develops the SIOP, we develop the very best plan we can using existing forces, but we do not generate force requirements. However, any improvement in hard target kill capability, whatever the source, would be welcome and useful in achieving desired damage levels against the increasingly hardened Soviet target structure.

[Deleted.]

However, for striking time sensitive hardened targets, there is no substitute for prompt systems. For that job we definitely need a system such as MX in a survivable basing mode.

ENDURANCY

Senator **Warner**. I asked our witnesses from the Department of Defense in yesterday's hearing on C^3 if they would work with the committee's staff to develop a presentation which would be helpful to the committee members in understanding the question of making our strategic forces and the C^3 system which serves them more enduring.

Will you likewise agree to assist us in developing such a presentation?

General **Davis**. Both the SAC staff and the Joint Strategic Connectivity Staff have been actively studying the problems of protracted warfare and the systems needed for an enduring strategic force capability. We would be pleased to contribute to the development of a presentation on this important subject.

NEED FOR PROMPT HARD TARGET CAPABILITY

Senator **Warner**. In your analysis of Military Damage Expectancy (MDE) you say the MX/MPS and the B–1 are about equal. But what about prompt hard-target kill capability? Isn't that important?

General **Davis**. Yes, a prompt capability against hard targets is important. Targets such as [deleted] change value rapidly over time, and many of them are very hard. However, the time urgency of certain Soviet targets is highly scenario dependent and difficult to quantify. Therefore, although our allocation scheme [deleted]. Also, our analysis assumed that [deleted]. The MX missile remains capable of placing these at greater risk than current weapon systems. Prompt hard target kill is a major advantage of the MX weapon system and a factor which supports a survivable MX deployment.

SAC AND MX BASING

Senator **Warner**. The Strategic Air Command has, in the past, testified that multiple protective structure basing was by far the preferred way to proceed with deploying the MX missile.

General Davis, the Townes Panel reportedly recommended placing 100 MX missiles in 100 new silos with the option to expand if other basing modes did not prove satisfactory. Do you think such proposals for keeping the deceptive basing option open even if you did not proceed immediately to an MPS system have merit?

General Davis, have you had an opportunity to review the Townes Panel report?

General **Davis**. We did not have an opportunity to review the Townes Panel report, so it would be inappropriate for me to comment in detail on its proposals. In general terms, however, I believe that preserving some form of deceptive deployment as a future option has merit.

SAC AND LONG ENDURING NUCLEAR WAR

Senator **Warner**. SAC is responsible for conducting a nuclear war for the United States if there should be a central nuclear exchange. SAC has studied numerous scenarios and the military requirements of each.

Has SAC conducted any study in recent years which has concluded that a nuclear war is likely to be of very long endurance with both sides exchanging weapons weeks and months after the initial strike, and in great numbers?

General **Davis**. Senator Warner, our studies are designed not to evaluate the likelihood of one type of war as opposed to another, but to assess the ability of current and planned forces to support the national figure. As you know, guidance in recent years has placed increased emphasis on the ability to conduct a protracted nuclear war. That type of conflict is a possibility, and we must consider it because it lays very stringent requirements on our forces and supporting C^{3}I systems.

In my judgment, protracted war is almost likely to consist of an initial strike followed by a series of much smaller attacks directed against residual and reconstituted military forces and supporting industry. The President's program will significantly improve our ability to conduct protracted warfare of this type and to react appropriately in any oher scenario. That, in turn, srengthens deterrence and reduces the likelihood that we will have to engage in any type of nuclear conflict.

SAC AND SLCM

Senator **Warner**. The Reagan administration has recommended deployment of nuclear, land attack SLCMs as part of [deleted] of the SIOP from time to time.

Did SAC recommend deployment of nuclear SLCMs as part of the SIOP?

How will the Joint Strategic Target Planning Staff make use of nuclear SLCMs?

General **Davis**. SAC did not make a recommendation for or against nuclear SLCM as part of the SIOP. It is my understanding that [deleted].

REAGAN VERSUS CARTER FORCES

Senator **Warner**. The President's decision to terminate MX/MPS and to restructure our strategic forces changes both the new weapons to be deployed and existing forces.

In terms of static measures such as weapons, delivery vehicles, megatonnage, time urgency, countermilitary potential, equivalent megatonnage, etc., could you compare the new plan with the old?

Could you also compare the new and old plans using the kinds of dynamic models SAC has used in the past and could you make clear your assumptions?

Could you comment on the impact of early retirement of the Titan IIs and B-52s on your force capability?

Do these force structure retirements result in going deeper into the so-called strategic bathtub?

General **Davis**. Static measures alone are not necessarily accurate indicators of the capability of a strategic force; however, they are important from a perceptual aspect. A comparison from [deleted].

COMPARATIVE STRATEGIC FORCE ANALYSIS

Senator **Warner**. General Davis, you have provided the committee with a study entitled "Comparative Strategic Force Analysis." As you know, the subcommittee has received this kind of analysis before and desired to see it updated.

On page 8 of your analysis, you show that the [deleted] is that correct?

On page 8, you also show that [deleted] is that correct?

General **Davis**. Senator, your interpretation of our analysis is correct. Although [deleted]. This difference is due to the absence of MX in MPS under the planned force. [Deleted.]

THE BALANCED TRIAD

Senator **Warner**. In the past, SAC has shown this subcommittee charts showing the pre- and post-strike contributions of each leg of the Triad to the SIOP.

Could you show us those pre- and post-strike contributions of each leg of the Triad for the CG-80 force and for the new planned force?

General **Davis**. Senator Warner, the following table contains the information you requested. The data show the percentage of expected damage achieved against value and military targets when all three legs of the Triad perform as expected, when any one leg fails, and when any two legs fail.

[Deleted.]

As the figures show, [deleted].

SAC AND FORCE RETIREMENTS

Senator **Warner**. Some concern has been expressed over the early retirement of the B-52s and the Titan IIs.

General Davis, in your view, how serious is the decision to retire the B-52Ds and the Titan IIs?

What contribution do the B-52Ds and the Titan IIs make to our strategic nuclear forces?

The Titan II missiles will begin phasing out fairly soon. How long will it take to complete retirement of the Titan IIs?

In your view, are the Titan II missiles unsafe?

General **Davis**. As an operational commander, I would have preferred to keep the B-52D and Titan on board until the B-1 and MX entered the inventory. These systems are old, but they do contribute to the total number of weapons committed to the SIOP, to coverage of the target base, and to total megatonnage. We have revised both the Strategic Air Command Commitment and our target list priorities to reflect the reductions and minimize the overall impact.

The retirement rate for Titan II is about one per month beginning in 1982 and ending in 1987. The retirement is for cost rather than safety reasons. The study that I conducted following the incident at Little Rock indicated the system will remain both safe and supportable.

BIAS AND ACCURACY

Senator **Warner**. Several persons have asserted in the newspapers that problems with bias resulting from differing magnetic fields around the earth would prevent the Soviet Union from obtaining the accuracies necessary to attack and destroy U.S. ICBMs in their silos.

Has SAC studied the impact of bias on U.S. and Soviet missiles and do you believe that bias is a factor so significant that it would make MX missiles deployed in silos survivable?

General **Davis**. Both our own studies and those we have conducted in conjunction with the engineering community have concluded that these over-the-pole effects have a negligible influence on ICBM accuracy. Individual sources of error are either very small or are precisely measured and accounted for in guidance software. I have confidence in our ICBM accuracy figures and I believe our ability to precisely predict satellite polar orbits demonstrates the accuracy of our measurements of polar effects. We must credit the Soviets with similar abilities.

STRATEGIC DECISIONS AND SAC

Senator **Warner**. As the commander of our strategic forces, General Davis, you are the man who must plan for the deployment and the use of our nuclear forces.

Do you believe it would have been advisable from a SAC point of view to proceed with MX in multiple protective structures?

Did you recommend to the Secretary of Defense that the U.S. not deploy MPS or did you recommend placing MX in super-hardened existing silos?

Did you recommend "Big Bird" or "Deep Underground Basing" for the MX missile?

Do you support the decision to proceed with the B-1 bomber?

What are the capabilities which the MX in MPS would have provided you that are not provided for by the B-1 or by sea launched cruise missiles?

Did SAC conduct any studies in the last year which concluded that MX/MPS should not be continued or that MPS could not be made responsive to an increased Soviet threat?

From a SAC operational point of view, would you prefer MX deployed in Titan II or Minuteman silos?

General DAVIS. One of my first acts as CINCSAC was to write a letter to Secretary Weinberger recommending deployment of the MX missile in a multiple protective shelter (MPS) basing mode. I have made no recommendations concerning any other basing mode.

I made my recommendation based on SAC analysis that concluded that MX in MPS could retain acceptable survivability against projected Soviet threats, was better than any other system (including B-1 and sea-launched cruise missiles) at [deleted] and preserved the other valuable attributes of the land-based ICBM—accuracy, responsiveness, high alert rates and sovereign U.S. basing. The larger deployment of MX in MPS would have greatly expanded our prompt hard target capability. Nothing has changed that would significantly influence those study results.

Nonetheless, I fully support the President's decision to produce MX and deploy a limited number in superhardened silos. It provides the MX as early as possible, which is important in its own right both from a warfighting and perceptual point of view. Based on preliminary analysis, [deleted]. However, I regard either as an interim solution pending a final decision on a more survivable basing mode.

SAC has long recommended a dual track bomber program to insure a continuous ability to penetrate Soviet defenses and to reduce the imbalance in U.S. and Soviet strategic capabilities. The B-1 is an important part of that program and I fully support the President's decision.

EFFECT OF STRATEGIC BUDGET REDUCTIONS

Senator WARNER. General Davis, the DoD budget shows that the budget for each leg of the Triad has been cut from the POM level in fiscal year 1982. The total reduction in fiscal year 1982 is $2-3 billion for strategic programs.

The so-called "window of vulnerability" was first defined by SAC as existing in the early to mid-1980s—until the new strategic programs—MX, ALCM, etc—could bring the U.S./U.S.S.R. force balance back to the 1977 level.

Will these strategic budget cuts in fiscal year 1982 extend the window of vulnerability beyond the mid-1980s? Will the cuts in the near years, e.g., B-52 and Titan missile retirements widen the gap in the early and mid-1980s?

General DAVIS. Senator, let me put the fiscal year 1982 reduction in perspective. President Reagan's original budget proposal added more than $9 billion to the Carter budget for fiscal year 1982. Attempts to reduce federal deficit spending resulted in the recent reduction from the original proposal. We believe the remaining net increase of approximately $7 billion will provide adequate funds for the new strategic programs and will not extend the "window of vulnerability" beyond the time lines projected in our current comparative force analysis.

Although I would have preferred to keep existing forces on-line until replacements are procured. [Deleted].

ANALYSIS OF REAGAN PROGRAM

Senator WARNER. General Davis, over the past several years, this committee has benefited from the analysis of the comparative strategic balance performed by personnel at SAC Headquarters.

Have you done a similar analysis of the new strategic program?

Will you provide that to the committee in sufficient detail so we may understand the impact of the changes in each major program?

General DAVIS. Senator Warner, our latest analysis of the planned force is synopsized in the classified document you received in closed session on 4 November titled "Comparative Strategic Force Analysis." This document, combined with the information provided in our answers to your questions on "Reagan Versus Carter Forces" and "The Balanced Triad" (questions 17 and 19) should give your committee an accurate picture of the relative contribution of each major program under the new planned force.

Naturally, we will update our comparative analysis as the planned force takes more definite shape and will be happy to provide you with additional information in the future.

Questions Submitted by Senator Dan Quayle

B-1B PENETRATION CAPABILITY

Senator **Quayle**. The principal justification for the B-1B bomber is that it will be capable of manned penetration missions, beginning at IOC in 1986 and ending sometime in the 1990's, when the Soviets are anticipated to perfect their air defenses against the B-1.

(a) Specifically when in the 1990's can the Soviets be expected to have an effective defense against the B-1B, assuming the B-1B design, configuration and equipment complement that is provided for in the $19.7B program estimate?

(b) It is conceivable that the Soviets will make more rapid technical progress than currently estimated and achieve a level of effectiveness against the B-1B earlier than the date shown in the answer to question 1a.

If that revised date were, arbitrarily 1988, 1990 or 1992, would it still be worthwhile to develop the B-1B as a manned penetrator? If so, why? Alternatively, would it be more attractive to consider another aircraft for the cruise missile launch mission of the B-1B?

General **Davis**. Senator Quayle, we cannot predict precisely when in the 1990s the Soviets will be able to effectively counter the B-1B; it will depend on their effectiveness in deploying, operating and employing such projected weapons systems as the [deleted] AWACS, Look Down/Shoot Down (LD/SD) fighters and low altitude capable surface-to-air missiles. [Deleted] we expect [deleted] of their fighters to have a LD/SD capability, and up to [deleted] AWACS could be deployed. Their ability to employ such weapons effectively in the disruption of a general nuclear exchange remains [deleted]. Clearly, our aircraft will have to employ the techniques of avoidance, electronic countermeasures (ECM) and/or suppression. The B-1B navigation, ECM and weapons suites are designed to degrade the effectiveness of both current and projected Soviet threats.

While the Soviets could make more rapid technical progress than estimated and achieve an earlier than expected effectiveness against the B-1B, we consider it unlikely, given the complexities involved in countering low altitude penetration. The pace of the Soviets' success in overcoming significant technological barriers depends on the evolution of their indigenous technology and their success in acquiring applicable western technology. Given that the Soviets will make technical progress in this decade toward developing better fighters, SAMS, radars and air-to-air missiles, how quickly they can deploy these systems in the numbers necessary and how effectively they can train their personnel to use them to the greatest advantage is open to question. There is evidence that some programs are not developing at originally projected rates. For example, [deleted].

Building the B-1B will force the Soviets to continue to improve a costly and increasingly complex air defense system. The B-1B reduced radar cross section (RCS) allows for the application of [deleted] ECM techniques which cannot be used on the larger RCS B-52. The flexibility allowed by the B-1B combination of reduced RCS, higher speed and new ECM techniques applied with tactical coordination will reduce the effectiveness of Soviet air defense systems. The B-1B's characteristics will allow it to penetrate Soviet air defenses well into the 1990s and to perform effectively as a cruise missile carrier and conventional bomber for an extended period.

TRIAD CONCEPT

Senator **Quayle**. For the past two decades, U.S. strategy has been based on the concept of a Triad, which stressed Soviets defenses in three different ways. With the advent of cruise missiles we seem to be introducing a fourth leg.

Why isn't the cruise missile an adequate replacement for the B-1B's?

What kind of targets would be assigned to B-1B's that are not capable of being attacked by cruise missiles?

General **Davis**. Senator Quayle, it is a mistake to view the Air Launched Cruise Missile (ALCM) as a "fourth leg" of the Triad. It is a weapon delivered to its launch point by an aircraft. As an aircraft weapon it profits from the capabilities of the aircraft—survival launch, dispersal, planning flexibility, and the fact that the aircraft can be recalled. Although it is an outstanding adjunct to the manned bomber, the ALCM alone does not possess the inherent flexibility and capabilities of a bomber and crew. ALCM mission planning requires sophisticated equipment and rapid replanning is impossible. Thus, ALCM cannot react rapidly to a changing defensive environment, it cannot be recalled or terminated once it has been launched, and it does not provide real-time, battlefield management. In the Damage Assessment/Strike (DA/S) role the manned bomber aircrew can withhold planned weapon release if a previous weapon has attained the required level of damage. The ALCM cannot assess its assigned target.

The aircraft can accurately deliver many weapons of different types and yields making it effective across the target spectrum. The ALCM has [deleted]—making it ineffective against targets that require both a small miss distance and high yield and inefficient against "soft" target clusters where a single large yield weapon could destroy many targets.

In addition, many important targets are located [deleted]. Without bomber coverage, many of these targets would be accessible only by ICBMs. Reliance upon a single system for coverage reduces our Damage Expectancy on these targets. With at least two legs of our Triad, bombers and ICBMs capable of delivering weapons, we can preclude the catastrophic effects of a first strike attack on either one.

B-1 PROGRAM MANAGEMENT

Senator **Quayle**. Are the B-1's to be procured on a Fixed Price basis, since the Air Force has testified that they have unusual confidence in the cost figures? How much "Management Reserve" is in the $19.7B estimate?

General **Davis**. I would prefer that this question be answered by the B-1 Program Office, since our interest is primarily in the operational aspect of the program. We have asked the Program Office to provide the data.

B-1 FLIGHT CREW PROFICIENCY

Senator **Quayle**. Will B-1 flight crews maintain their flight proficiency in B-1 aircraft, or will simulators and special training aircraft be required?

What are the projected life costs of simulators and training aircraft, if indeed either or both are required?

Are the costs of these included in the overall program estimate of $19.7 billion for 100 aircraft?

General **Davis**. B-1 aircrew flight proficiency will be maintained through the use of the B-1 aircraft and flight simulators. Special training aircraft are not required under the current B-1 training concept. SAC has been directed to re-evaluate a range of B-1 flight simulator options in an effort to select an option that satisfies the programmatic issues of risk, schedule, and life cycle cost. Projected acquisition and life cycle costs are not available at this date since they depend on the simulator option selected. B-1 simulator costs are not included in the B-1 aircraft acquisition cost estimate.

ATB

Senator **Quayle**. It is understood that the ATB will not be able to carry cruise missiles.

Will the Stealth aircraft therefore be useless if it can't penetrate due to unexpected Soviet advances in air defense?

Has the Air Force investigated the ability of satellites (IR and radar surveillance systems) to detect the B-1B and stealth aircraft in the nineties? Is either potentially detectable?

General **Davis**. Senator Quayle, the ATB will be able to carry a wide range of nuclear and conventional weapons, including the cruise missile. The design of the ATB makes it highly resistant to Soviet defensive measures and will allow successful penetration against projected defensive threats and great flexibility to cope with unexpected threats.

The U.S. Air Force and other agencies have conducted [deleted] investigations in the area of satellite detection of aircraft. [Deleted].

WIDE BODY CRUISE MISSILE CARRYING AIRCRAFT

Senator QUAYLE. Why spend money on modifying 30-year-old airplanes? Why not modify wide body commercial transports and scrap the B-52's?

General DAVIS. This option was looked at extensively in the 1977-78 time frame and rejected for multiple reasons. Cost is the primary reason we modify B-52s and do not procure and modify wide body commercial transports. Modifying commercial transports for purely a standoff launch platform would require procurement of the aircraft, modifying it with nuclear hardened weapon delivery systems and ECM capability. Modification alone could cost over $100 million per copy. Costs aside, wide body commercial transports have a number of disadvantages which limit their warfighting capability. Transports are not prelaunch survivable like B-52s because they are slower to accelerate and escape the lethal area of nuclear blast. They have a high radar cross section which would allow the Soviet Union to detect, identify and destroy them. High density cruise missile loads on such aircraft would mean the loss of significant warfighting capability for each wide bodied carrier lost. Finally, the high density loading also causes significant problems with strategic arms limitations negotiations. To be cost effective, wide body transports must carry more missiles than SALT II would allow under a MIRV count system. The cost and the inflexibility to perform multiple missions does not warrant procurement of wide bodied commercial transports in lieu of modifying B-52s.

SUBMARINE AND DEEP UNDERGROUND BASING OF MX

Senator QUAYLE. (a) The OTA MX basing study seemed to favor submarines. Why isn't this being considered as an alternative basing system?

(b) With deep underground basing of MX do we have a "Launch under attack" option? If not, is this regarded as a serious strategic limitation?

General DAVIS. Deploying MX in submarines is an option that has been studied in depth during the past several years, Senator Quayle. There are several disadvantages of this option. First, it does not preserve the Triad concept because such a system would share any survivability and communications problems associated with the SLBM force. This would greatly lessen the problems facing the Soviet planner. Second, it would not retain the unique characteristics of a land-based ICBM force such as command and control, responsiveness, hard target kill capability, cost, high alert rate, and sovereign basing. Finally, the capability of our shipyards to accommodate the increased requirement is questionable.

In summary, deployment of the MX missile in submarines would incorporate the least desirable characteristics of the SLBM leg is the Triad while sacrificing vital strengths of the land-based ICBM.

Launch under attack is a tactic for dealing with a temporary vulnerability in our ICBM force, not a solution to that problem. If deep underground basing is eventually selected, it will be designed to provide adequate survivability and launching under attack will not be necessary. Whether it can be retained as an option to inject added uncertainty into an adversary's planning will depend on final design.

[Whereupon, at 12:25 p.m., the executive session was adjourned, subject to call of the Chair.]

STRATEGIC FORCE MODERNIZATION PROGRAMS

TUESDAY, NOVEMBER 10, 1981

U.S. SENATE,
SUBCOMMITTEE ON STRATEGIC AND
THEATER NUCLEAR FORCES,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

PROGRAMMATIC IMPLICATIONS OF STRATEGIC DECISONS

The subcommittee met in open session pursuant to notice, at 2:08 p.m., in room 224 Russell Senate Office Building, Senator John W. Warner, chairman, presiding.

Present: Senators Warner, Quayle, Jackson, Exon, Levin, and Kasten.

Staff present: Rhett B. Dawson, staff director and chief counsel; Francis J. Sullivan, minority staff director; James F. McGovern, general counsel; Paul C. Besozzi, minority counsel; Brenda K. Hudson, assistant chief clerk; Michael P. Donley, Frank J. Gaffney, Edward B. Kenney, Ronald F. Lehman, José E. Martinez, E. George Riedel, Kathleen Troia, professional staff members, and Karen A. Love, staff assistant.

Also present: Dennis P. Sharon, assistant to Senator Goldwater, Buzz Hefti, assistant to Senator Warner; Jim Dykstra, assistant to Senator Cohen, Robert Nichols, assistant to Senator Jackson, Arnold Punaro, assistant to Senator Nunn, Greg Pallas, assistant to Senator Exon, and Peter Lennon, assistant to Senator Levin.

OPENING STATEMENT BY SENATOR JOHN W. WARNER, CHAIRMAN

Senator WARNER. This afternoon we are pleased to welcome back Dr. DeLauer, the Under Secretary of Defense for Research and Engineering and Lt. Gen. Kelly H. Burke, the Deputy Chief of Staff Research, Development, and Acquisition for the Air Force. These witnesses, by virture of their responsibilities, are most aware of the technical details of the President's program.

We have already covered part of it, as you know, but it is important that we bear down now because this is the hearing record. Today's record is vital because it will be used not only in connection with any resolution of this approval that may be raised pursuant to the authorization act, but equally important in the deliberation on issues that may come out of the appropriations.

So I think you are all familiar with those contingencies. We expect you to expand and clarify information provided thus far in our hearings on the overall program of the President for the interim and long-term deployment of the MX missile. We will begin the hearing with Dr. DeLauer's testimony. Doctor?

STATEMENT OF HON. RICHARD D. DeLAUER, UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING, AND LT. GEN. KELLY H. BURKE, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT, AND ACQUISITION, HEADQUARTERS, U.S. AIR FORCE

Dr. DeLauer. Thank you, Mr. Chairman. I have a statement I would like to submit for the record and then summarize it to provide a background for questions and answers. So if that is agreeable to you I will submit it for the record.

Senator Warner. That is entirely agreeable.

[The prepared statement of Dr. Richard D. DeLauer follows:]

Prepared Statement on Strategic Force Modernization by Hon. Richard D. DeLauer, Under Secretary of Defense for Research and Engineering

Mr. Chairman and members of the committee: I am pleased to testify before you in support of our program for strategic force modernization. In previous sessions, you have heard thorough testimony on our five part program which is designed to improve the deteriorating strategic balance with the Soviet Union. I would like to stress that the strategic decisions that have been made should be treated as a complete package which will place the United States in a position to reshape the U.S./Soviet strategic competition in the years ahead.

In accordance with the desires of the committee, I will not spend my time today reiterating the complete structure of our strategic force modernization program. Rather, I would like to address the issues that have arisen relating to the program as a whole, and the specific issues associated with our bomber and MX decisions. By doing this, I hope to make clear to you my views on the necessity of proceeding with the strategic force modernization program as presented to you in previous testimony.

Regarding the overall program, some have viewed it as being too costly while expressing concern over our cancellation of the MPS basing mode which is considered to be an unaffordably expensive approach to the long term survivability of the MX.

Taken as an integrated entity, the strategic forces modernization program is a good example of cost-conscious design. It negates much of what the Soviets have invested over the past decade in their pursuit of nuclear superiority while spending far less than what the Soviets are projected to spend. Let me reemphasize the spending point: Even with this program, which some have claimed is too expensive, the Soviets will still be building far more than we will. We have achieved a cost-effective program by choosing to counter Soviet capabilities rather than duplicating their massive destructive power.

Some have questioned the capability of the overall program for not doing enough to close the window of vulnerability while at the same time proposing the deletion of critical portions of the program which would cause the window to widen.

The President's program would reverse the trends in the U.S./Soviet strategic balance and reduce by more than half the U.S. margin of inferiority that would have existed in 1990 under the previous program. Depending on which of the permanent basing modes for MX is or are selected, we could eliminate as much as three-quarters of that inferiority by 1990. Of equal importance, the President's program would significantly reduce the instability and the incentive for a Soviet surprise attack on the United States.

Under some of the alternative programs that have been proposed, the U.S. margin of inferiority would be about three times that of the President's program and would even exceed that of the previous administration's program.

Finally, some have viewed the interim silo basing of the MX as not providing adequate survivability but have then proposed to not build the B–1B which we believe is important to maintain the survivability of our bomber force. We are seriously concerned regarding the ability of the B–52 to survive a Soviet SLBM attack—its survivability depends critically on assumptions about how the Soviets might operate their SLBM force. We must, in my view, build the B–1B to avoid having the survivability of our bomber force dependent upon factors in which we cannot have reasonable confidence.

I would now like to discuss several aspects of our MX proposal. The first of these is cost and I will now provide you the costs of two typical silo deployments. Each is expressed in constant fiscal year 1982 dollars and includes procurement of 226 missiles, enough to support the deployment number of 100 selected by President Reagan. Each includes the cost to reconstruct silos to achieve hardness of 5,000 psi, and I wish to reassure you right now that we understand what has to be done in order to achieve that level of hardness, and we know we can do it with current knowledge. As you know, his decision called for deployment of some number less than 100 MX in silos. The total cost to deploy MX in 36 Titan II silos is $21.6 billion, of which $7.8 billion is for basing. Included in that figure is the total cost to harden those silos, or $780 million, which works out to a hardness cost per silo of $22 million. Alternatively, the total cost to deploy MX in 40 Minuteman silos is $19.4 billion, of which $5.6 billion is for basing. Included in that figure is the hardening cost, or $910 million, which works out to a hardness cost per silo of $23 million. The hardening cost, quoted ıor both options include testing, hardened launch facility equipment, and silo construction. Construction costs alone would be approximately $10 million per silo in each case.

There are many factors to be considered in choosing between Minuteman and Titan silos. The relative costs that I have just provided are certainly very important. Also important is the availability of the particular geologic conditions necessary to achieve the hardness levels we are after. Range differences introduce targeting efficiency as a factor. Due to the nature of the problem we are facing, compatibility with ballistic missile defense is a prime consideration, as is compatibility with strategic arms reduction talks considerations. We intend to make this selection in the coming weeks so that system-peculiar work can progress swiftly.

One issue that has been raised is why we don't go straight to the final basing mode. The answer is that the powerful MX missile, whose development is continuing very successfully, will be available far sooner than any of the long term basing modes we may select, and we simply must get that missile into the inventory as soon as possible to begin to correct the current and growing inbalance in strategic forces caused by the inexorable Soviet build-up. We have gotten into this seriously unfavorable position through delay and indecision—what we need now is action. In addition, early deployment of MX in silos will help focus future Soviet ICBM investment on survivability rather than modernization or expansion. Their silo-based forces would no longer be able to threaten U.S. ICBM's with impunity. Lastly, having an active production line for MX will also give us the capability to respond to further expansion in Soviet ICBM forces with rapid, emergency deployments of our own. We currently are not able to do this. The limited silo deployment of the MX, combined with the production program for 100 operational missiles, serves this purpose.

Before leaving this important issue of by-passing silo-deployment, I think it would be helpful to you for me to discuss the outcome if that were done, if MX were canceled. The first and obvious outcome would be that the Soviets would continue to be able to regard their silos as sancturaies within which they could continue to build an ever-increasing threat to the United States until the early 1990's. The second outcome is that the United States would be in the position of not having produced any ICBM's for a period of 14 to 16 years whereas the Soviets have maintained at least three different models of ICBM's in concurrent production, with new or modernized systems being introduced every five years. They are forecast to continue that pattern. With the United States doing nothing we could not realistically expect to motivate the Soviets to negotiate a meaningful and equitable arms reduction agreement.

Some have suggested that this silo-deployment means that we have decided to embrace the launch under attack defense concept. Let me say that there is no nation rich or foolish enough to spend five to seven billion dollars on the survivability of a system unless it intended for that system to ride out an attack. We are not changing our consistently held view that launch under attack is a good capability to have but is a dangerously destablisizing strategy to depend on. We do not and we will not depend on it. Finally, some have suggested that this silo deployment will drive the Soviets to adopt launch under attack vice mobility as a survivability stragegy. I believe that suggests that the Soviets are not as rational as we, and I reject that view. I believe my Soviet counterpart can see the flaws and related potential for accidental catastrophe as clearly as I, and he will have no part of it. No, I think he will select mobility, or active defense, or negotiated reductions or combinations of these as his response. And we would welcome any of those as being stabilizing because of their defensive nature.

I would like to address some specific questions that have been raised regarding our bomber program.

The first point that needs to be made concerns the costs of the program. Although our program funds two developments, the unit cost of the B-1B relative to the significantly higher projected unit cost of the ATB results in an overall cost for the mixed B-1B/ATB force being approximately the same as an all ATB force.

We have high confidence in our ability to achieve cost and schedule objectives for the B-1 program. The Deputy Secretary of Defense and I have reviewed the program and have directed appropriate controls to ensure that the program does not exceed its $20.5 billion budget in fiscal year 1981 constant dollars. Particular management attention will be paid to limiting cost growth in the airframe, support equipment, initial spares, and avionics and no change to the presently planned B-1B acquistion program or major changes in configuration will be made without approval of the Deputy Secretary of Defense.

Although we have demonstrated the technologies on which the advanced technology bomber is based, the ATB is still a paper airplane. Our time-phased modernization program provides the breathing room necessary to pursue the orderly development of an ATB. Concentrating solely on the development of an ATB would be a risky course to follow. The ATB is now in the very early stages of design and concept development. The technologies involved are exciting and promising, but because of the quantum leap in technology and the consequent uncertainties involved, there would be a high degree of program risk in concentrating solely on an ATB. Under these conditions I cannot have the same confidence in ATB cost and schedule objectives as I do with the B-1 and I believe that there would be substantial risk in attempting to accelerate the program. In my judgment, the cost and schedule risks associated with the ATB would be about twice that of the B-1.

Viewed from a different perspective, attempting to move to a one-bomber program by accelerating the ATB would increase costs beyond those of the planned two-bomber program while still leaving us with a significant period of vulnerability.

Let me now specifically address the urgency in proceeding with the B-1B program to enhance the survivability, endurance, and penetration of our air breathing forces.

In contrast to the B-52, the B-1B will be able to survive, with high confidence, Soviet preemptive attacks on our air bases. In order to survive attacks by Soviet submarines patroling off our coasts, bombers must be able to take off and clear the area around their home base within minutes. The B-1B can fly out faster than the B-52, and it is designed hard against blast overpressure and other nuclear effects. As a result, the B-1B will provide a much higher margin of safety in launch survivability, which, in turn, will reduce Soviet incentives for a surprise attack on our bombers.

In addition to improved prelaunch survival, the B-1B will also have improved capabilities to endure for prolonged periods, if necessary. Because B-1B's can take-off and land on much shorter runways than B-52's, significantly more airfields will be available for B-1B operations after a large-scale Soviet nuclear attack. In the months ahead, we will be examining ways to provide essential logistical support to surviving and reconsitituted B-1B's. We believe we must improve the endurance of our forces, and supporting communications and control systems, in order to deny the Soviets any prospects of gaining an advantage by initiating nuclear war. The B-1B is an important step in that direction.

There has been recent controversy regarding the capability of the B-1B to penetrate the Soviet Union. A joint assessment by the Department of Defense and the Central Intelligence Agency has recently been provided to you to clarify their position. I would like to recall the contents of that letter.

The intelligence community estimates that current Soviet air defenses would be unable to deal effectively with conventional bombers penetrating at low altitude because they lack sufficient deployed forces with the technological capabilities to detect, track, and engage such tragets effectively. The Soviets have several programs underway that will substantially improve their capabilities to perform each of these key functions by the late 1980's. The impact of such improvements will depend on the pace of their air defense deployment programs and the progress they make in improving the technical capabilities of their radars, command and control systems, and weapons.

Although the number of deployed units projected by the intelligence community for the late 1980's would not be sufficient to heavily defend all potential targets in the Soviet Union, the Soviets are likely to concentrate their better-quality defenses to protect the targets which they perceive to be most valuable.

The B-1 as originally designed, while having a radar signature smaller than the B-52, would nevertheless have been detectable by Soviet radars. However, continuing development and testing of radar signature reduction techniques has achieved a further tenfold reduction in radar signature relative to the original B-1 design. This reduced signature allows the B-1B to employ fundamentally new ECM techniques which cannot be applied to the B-52 due to its large radar cross section. As a result of the combination of reduced signature, higher penetration speed, and new ECM, Soviet defense engagement opportunities will be severely reduced. Jamming power levels necessary to mask the remaining signature are achievable.

Tests against advanced technology air defenses indicate a high degree of success with these techniques. DOD analyses based on the results of these tests indicate the B-1B would have the capability to penetrate anticipated Soviet air defenses well into the 1990's in a nultitude of employment modes and to perform effectively as a cruise missile carrier and as a conventional bomber into the next century.

The planned ATB will serve as an essential element of a mixed force of penetrating bombers and cruise missiles capable of holding at risk the whole variety of target necessary to deter the Soviet Union through the 1990's and well into the next century. The ATB will ensure continuing capability against the extremely important targets which the Soviets would defend most heavily with combinations of their newest air defenses and mobility or superhardening. A mixed force of B-1 cruise missile carriers and the ATB will present an extremely difficult problem to the most sophisticated defense system—thereby requiring major expenditures by the USSR on defensive systems that cannot be used to attack the United States and its allies.

The misunderstandings that have arisen over B-1B penetrativity and costs have unfortunately tended to draw attention away from the more critical needs for this program.

The most important need in my view is to strengthen our deterrence. To have a strong deterrent we must be able to hold at risk targets that are important to the Soviet leadership. This includes the leadership themselves, the communications they use to control their country, their conventional military forces, their extra reload missiles, and key segments of their war-supporting industry. The Soviets have invested heavily in protection of these high-value assets by hardening, mobility, and air defenses. To hold these assets at risk, we need a system that can survive a Soviet attack, endure until we can locate the mobile targets, accurately deliver enough megatonnage to get the hard targets, and penetrate the defenses protecting them.

ICBM's SLBM's, and cruise missiles cannot cope with targets that can be moved, and don't pack the megatonnage to knock out deeply buried targets. The B-52 is losing its capability to survive and penetrate heavily defended targets and has no endurance. The B-1B is our only near-term option to hold these targets at risk.

Looked at from the other side, without the B-1B, the Soviet leaders could believe that they could protect the assets most important to them. In my view, it would be unconscionable to have allowed the Soviets in SALT unlimited numbers of reload ICBM's while denying ourselves the capability to prevent their effective use of these assets.

A second need is to eliminate the present incentive to strike first in a crisis and the growing incentive for a Soviet surprise attack on the United States. To do this requires improvement in bomber dispersal and base escape capabilities. The B-1B provides both of these.

A Third need is to control escalation. In the event that deterrence should fail and our forces are attacked, we must have a capability to discourage the Soviets from escalating to attacks on our cities. This requires both prelaunch survival (which for the B-52 is declining) and post attack endurance (which the the B-52 can never attain).

A fourth need is to redress the imbalance in the strategic nuclear forces. For the bomber force, this also means an improvement in prelaunch survival and post-attack endurance. The potential of the B-1 to be reloaded and refused—rather than operated as a one-shot expendable system—will allow us to redress a major portion of the imbalance at lower cost than competing options.

In conclusion, I urge your support of these programs which I consider essential to the goals of our overall strategic force modernization program. We must reverse the ominous trends which currently exist in the U.S./Soviet strategic imbalance. Our five part program, as a whole, will support this goal and is the best we can hope for within budgetary constraints and development deployment time frames.

Dr. DeLauer. I am most pleased to be able to be here and talk to you and to be able to present my views of the strategic modernization package. I would like to preface the whole thing with the fact that here is an opportunity that this administration has taken to provide a force modernization of the strategic deterrent. It is deterrence we are talking about.

To be effective the deterrent force has to include all of the elements of deterrence, not just one segment or the other, but the total amount. This is the first time such a package has been presented to the Congress for you to deliberate on what the next 20 years will mean as far as the strategic deterrent posture of this country is concerned.

Part of this deterrent posture includes the credibility of what is contained in it. It is this question of credibility—how to use it; how it is perceived by the opposition—which is the thing I would like to cover today, in particular, as well as some of the details of some of the elements.

First, I would like to get out of the way the things which are not really in contention. There is no question that most people knowledgeable of our situation will support the effort being made in the command, control, and communications area because without it we cannot handle the rest of the elements of the package and the rest of the elements of the force. That really starts the question of credibility, of being able to do the job.

I might add parenthetically that the C^3 portion was conceived and presented in direct collaboration with the military professionals of the Department. It is their program and we supported it.

Going to the far end of the strategic package we have the question of the deployment of the D–5 missile in our submarine-launched ballistic missile force, starting in late 1989–90. That, again, is another capability that is pretty much without dispute. It provides us in that period of time, a survivable counterforce capability because of this highly accurate and highly effective missile system.

With the changes we are forecasting and the additions we will make to the command, control, and communications system, we fully expect to have positive command, control, and communications to that particular portion of the Triad. Therefore, it will be able to be used as a prompt hard target kill capability.

Senator Warner. It also aids the antisubmarine warfare (ASW) factor.

Dr. DeLauer. Absolutely. Enhanced communications permit survivability to be enhanced because it permits our submarines to run deep and fast.

The air defense portion of the package is a reasonably modest attempt to fill a deficiency which now exists in our air defense capability. With the production of the Backfire bomber at something like 3 a month, 30 a year, in a very few years the Soviets are going to have an enduring capability with their Backfire bomber. It is, indeed, intercontinental. They have provided the capability for in-flight refueling and it is only prudent for us to take account of the fact that that is indeed a threat and do something about it.

The strategic package includes ways in which to improve our radar surveillance and also to enhance some assets, particularly our interceptor aircraft through F-15 deployment to be able to handle a reasonable threat of Backfire bombers.

Now that brings me to the two hard parts of the question—the modernization of the manned bomber force and the land-based missile system. I would like to take the bomber force first.

People have been concentrating on penetrability and I will talk more about that in a moment. I would like to present the bomber picture slightly differently than it has been presented in the past. Since this total package is based upon the premise that we have to have survivability, not only at the terminal end of the mission but en route and at the initial portion of the mission, we have to address ourselves very carefully to the bomber situation.

The B-52, with the cruise missile, has addressed itself to the question of capability at the terminal end of the mission. With the B-52 characteristics and the character of the defenses of the Soviets, the ability of the B-52 to do particularly high-level but even low-level penetration of these defenses is problematical at this time, and without question completely uncertain in the future.

This means the B-52's future mission in the Triad would be as a standoff cruise missile carrier. This has been recognized by the Soviets. They use their SUAWACS, which is equivalent to our AWACS, for interdiction of the B-52's further out from the edges of the Soviet Union. These are activities they are accomplishing at the present time.

So in-flight survivability of the B-52, even with standoff capability, is something we must be concerned about, particularly with their hardness against the electromagnetic pulse which comes with a high-altitude nuclear burst. So that is suspect.

But the real question is the whole issue of whether the B-52's, in a reasonable way, can get off the ground before a surprise attack or even under a generated attack?

Senator WARNER. In other words, survivability is the most vulnerable point?

Dr. DELAUER. That is the most vulnerable point of the land-based bomber system. As we deploy cruise missiles on the bomber force they are going to be an inviting target for a surprise attack. If you do the analysis of a submarine-launched missile attack against the bomber bases, the probability of having a sufficient number of B-52's left to employ in the SIOP mission gets less and less as they get older and older and as the Soviets have a greater capability in their SLBM force. So one of the most important things we want to address is the question of base escape and we need to address it as soon as possible.

It turns out that the B-1B and the ATB will be designed with that particular survivability option in mind. They have a quick-start capability and a short takeoff capability. They will be designed specifically for the base escape problem. They will be harder both from an overpressure standpoint and from an EMP standpoint. This is part of the design criteria of both weapon systems.

Fortunately, we know more about how to do it in the B-1B, since it is a flying configuration which was designed like that in the beginning, than we do in the advanced technology bomber which, at the present time, is in the design formulation phase. We do not have the ATB structure and other things tested yet.

Senator WARNER. But that will be a built-in checkpoint?

Dr. DELAUER. Absolutely no question about it.

Now in the bomber case, if we have the B–1B configured as we now have it configured, subsonic with reduced radar cross section from the previous model which was supersonic and in which we had a hard time hiding the inlets, we will have a configuration of a manned bomber that will be able to penetrate the Soviet defenses as we can now postulate them anywhere from 1990 to 1995–98, depending upon what the Soviets do.

This whole question of penetrability is locked up in generalities. You have to get specific. Have indeed the Soviets improved their radars? What have they done about their command and control to be able to net those things? What have they done about their lookdown/shootdown capability? What have they done about hardening their facilities? What have they done about moving the targets that they want to protect?

All of these things have to do with the way you would go after a set of targets, particularly high value targets within the Soviet Union which is the absolute No. 1 mission for the manned bomber. It can carry a large payload that can take out very, very well-placed and super hard targets and it can also go after mobile targets, both of which the Soviets have demonstrated they are capable of implementing.

So that is the reason for the B–1B decision. It gets that capability to us early. At the same time the Soviets will, in turn, have to do something to upgrade their defense capability. The B–1B radar cross section will be such that it will indeed be a real threat to the Soviets' defenses. They will have to do something about it.

General Burke can talk a little bit more about this, but our estimate is it will take in excess of $200 billion for the Soviets to upgrade that defensive system. This is what we want them to do. This whole package is conceived for the purpose of forcing the Soviets to react in a manner consistent with our desires. One is to force them to put the money into defensive systems, not offensive systems. The other is to make them continually upgrade something that they think is adequate at the present time.

Both of these configurations will do it. In the next 16 to 17 years they will have to worry about the B–1B and as the ATB development progresses they will have to worry about that, which is another order of mangitude improvement. That will mean for another 15 years they will have to make substantial new investments in their defense systems which right now they seem to think are very adequate even though they continue to upgrade them.

As a matter of fact, most of their development has been in offensive systems. So, as a consequence, I think this is a part of the package which hasn't had enough discussion and which hasn't had enough comprehension about just how powerful that part of the package is.

Senator WARNER. What you are saying is it will be almost destabilizing of their economy?

Dr. DELAUER. It depends upon how they want to apportion their resources. You can always sit down at the table and talk about arms reduction if you want to.

Senator WARNER. Well, we are all hopeful that will be an outcome.

Dr. DELAUER. That is absolutely right. That is the reason we are here.

So this is the direction in which we are going. People talk about the one bomber-two bomber problem.

Senator WARNER. Before you close out on that, you used the phrase "forcing the Soviets to react". Really this program was constructed on the predicate that we, the United States, were slipping behind in terms of our strategic forces.

Dr. DELAUER. That's right.

Senator WARNER. And I think the President continues to use the word "restoring the balance". Now that is the prime objective, is it not?

Dr. DELAUER. That's absolutely right.

Senator WARNER. And really secondarily is the fallout that they have to react in terms of their economy and shift their priorities within their defense systems from offensive to defensive systems.

General BURKE. That, too, helps with the balance.

Senator WARNER. Yes. I recognize that. But as long as we are establishing the litany here, you are recasting it but you are not departing.

Dr. DELAUER. Oh, absolutely not. That is what I was intending to convey, that we would like to stop being reactive and be proactive but be proactive with a purpose. And the purpose is to redress the balance and to hope that some form of reductions talks might take place.

Now we come to the question of affordability in the bomber area. We have made our estimates. We have looked at extending the existing bomber force, which consists of B–52's and FB–111's. We have considered the size of that fleet and maintaining them and operating them, notwithstanding the fact that they have weaknesses operationally.

This is strictly an economic analysis out to the year 2000 and our estimate is it is around $93 billion to do that in present year costs. So the existing B–52 force doesn't come for nothing. It is high on operation and maintenance costs. We have more of them. We will have to make some changes to many of them to be able to handle the particular cruise missiles we are buying.

It is an aging force that takes a lot of care and it is, in our estimate, around $93 billion. We have looked at its replacement. We have looked at the replacement in a way that was as effective or more effective in handling the threat and built a force structure based upon that particular assessment.

Now this can be done in two ways. It can be done with a B–1B force. We will calculate it out and estimate how many B–1B's it would take to replace all the FB–111's and B–52's. We have come to that number and the price of that program was around $100 billion out to the year 2000.

Then we looked at an advanced technology bomber force and we have an R. & D. program to go through before we can get production. So the whole thing slips down 4 or 5 years. We looked at that particular price and it came out, for the same set of ground rules, to about $112 billion.

Then we looked at the combination of the B–1B and the ATB. I will provide part of the rationale for that. When we finished doing the same kind of analysis with the same set of criteria and the same assumptions, this combination came out to be $114 billion. That is $114 billion for a brand new force out to the year 2000 as against $93 billion for a force that is completely inadequate and is aging every day.

We felt that over a period of almost 20 years that difference of about $18 billion was worth the recommendation to proceed on that particular course of action. We think the country can afford that over that period of time.

Now why did we look at the B–1 and then follow it with more advanced technology? As you are well aware, Mr. Chairman, Congress has directed that the Department of Defense come in with a long-range combat aircraft program that provides a conventional manned bomber capability as well as one that has a strategic capability and have it operational before 1987.

You people asked us to do it. We have come in and given you that program. It is the B–1B followed by the ATB. Why do we think this is a good program? Because one of the things that the Appropriations Committees on both sides of the Congress have criticized the Defense Department for its acquisition strategies in weapons acquisition.

There is a GAO report out which the Congress has endorsed which says stop betting on advanced technology before you prove it. Do some testing and some configuration development before you enter production. Once you enter production, for goodness sakes, have some competition throughout the program so no one gets in a sole source position.

This is what we presented. The B–1 is flying. It is a real machine. It is there. It has been through the R. & D. part of it. We have invested close to, what, $6 billion?

General **Burke**. [Nods affirmatively.]

Dr. **DeLauer**. We know it can fly. We have tested it. It runs. We know what the configuration we want to build and put into production is. That is fixed. We have a price. We have the first nine airplanes as a fixed price incentive program, not a cost-plus type of operation. The long lead items for the next lot are going to be fixed prices. And then, as we proceed, the fixed price goes down. That is the present program, exactly what the Congress has asked us to do.

Regarding competition, we have the ATB coming along and when we are all long gone there will be two competitive programs that future administrations and future Congresses can decide between as to which one they want to buy. I am telling you that this is the best way to get the lowest cost for our weapons systems, to have two good design and manufacturing teams competing with each other throughout the life of the program. That is what we are doing.

Senator **Warner**. I understand your theory but I am not so sure in my own mind it's applicable to this. In the first place there is a high degree of uncertainty which remains with the ATB. At what point in time that becomes a real competitor to the B–1 remains to be seen.

Second, while I am enthusiastic about the B–1, you are indicating that maybe there is some flexibility in the magic 100 now and that if the competition goes on and it looks as if the contractor is taking some advantage of the Federal Government you drop off the 100 and suddenly shift to the ATB. Is that what you are suggesting?

Dr. **DeLauer**. I think in the time we are talking about, which is 6 or 7 years from now, we may have the option to do that.

Senator **Warner**. You may have the option?

Dr. **DeLauer**. But it isn't our plan to do that. Our plan is to build 100 of the B–1B and an equivalent force of ATB.

Senator **Warner**. But there is that flexibility in there?

Dr. **DeLauer**. Absolutely, there is. That's what you've been urging on us, to provide you with that flexibility.

Senator **Warner**. The other thing I want to make clear, the IOC of the ATB, as I understand in previous testimony, that is determined by making your R. & D. checkpoints as opposed to budgetary considerations.

Dr. **DeLauer**. Absolutely. The difference between a late eighties IOC and the early nineties IOC we are talking about here is that with the late eighties IOC, which is a contractor's proposal, we would have to make a production decision before our first flight, and I am not willing to accept that kind of a program.

We would have to start full-scale development as of right now, and we have yet to pin down exactly the configuration of that aircraft. We have to look to see what the future might hold, to see whether or not it is a two-man crew, a three-man crew, or a four-man crew. If, indeed, we will have ECM in that airplane at some later time we want to be sure to have weight and space reserved.

So we want to make up our mind on that. So what we've done is had an interim full-scale development program of 30 months put in there, and that is the only difference between the two IOC's. That has nothing to do with funding limitations. The program has been funded exactly the way I have said.

Senator **Warner**. Are you representing that there is adequate funding in the 5-year defense plan now for the ATB, particularly in fiscal years 1982 and 1983?

Dr. **DeLauer**. There is, absolutely.

Senator **Warner**. And you can meet those engineering and R. & D. checkpoints with the funding in there?

Dr. **DeLauer**. That's what we have. You may get some conversation by my own great, good friend and fraternity brother, Tom Jones, saying he could use money faster, but I think we have a decent kind of a program.

So that's the bomber side of the issue.

Now there is some question about the accuracy or the solidity of our costs.

Senator **Warner**. Before we depart that, you used $93 billion as a ball park for the continuation of the B–52 force, the modifications, the upgrading, and so on. Then you used two figures for the B–1. I think, what, $100 billion for the B–1? What figure did you use?

Dr. **DeLauer**. About $100 billion if you replace that force with all B–1B's.

Senator **Warner**. And if you went to the ATB it would be $112 billion?

Dr. **DeLauer**. $112 billion.

Senator **Warner**. What figure did you give the mix of the two?

Dr. **DeLauer**. $114 billion.

Senator **Warner**. $114 billion?

Dr. **DeLauer**. Yes.

Senator **Warner**. So as the Congress looks to this issue, it is really balancing a $93 billion investment for a continuation of the B-52 against $112 billion for a mix of the two new bombers; is that correct?

Dr. **DeLauer**. $114 billion, around $112-$114 billion. That is probably within the accuracy of our estimates and much of that is O. & M. We are using present O. & M. rates and I leave it up to you to figure out whether labor intensive things will get cheaper or more expensive in the future.

But they are all based on the same criteria, so we aren't playing any games with numbers.

Senator **Warner**. And of course there is a substantial enhancement of capability with the two options?

Dr. **DeLauer**. One option can do the job and the other cannot.

Senator **Warner**. And the survivability at the origination end, the takeoff, is the key to it?

Dr. **DeLauer**. It is insured.

Senator **Warner**. OK. Go ahead.

Dr. **DeLauer**. There is some question—as a matter of fact it was not only a question—there was a headline this morning about other people making estimates on the B-1B costs. I thought I would head that off.

I have had a chance to look at the CBO's report. I have looked at all of the elements that they have in there. Their arithmetic is all right. Their judgment happens to be one I might question. I think if you examine those numbers carefully you will find that the program we are presenting and the numbers we present are consistent with theirs.

They have expressed the costs in outyear dollars and have used an inflation rate which they have assumed. They have also added things to the program that we are not going to add. I can cover them one by one, or Kelly and I can cover them one by one. But it's clear what they had is not the program we are proposing.

The B-1B we are proposing has a cruise missile carriage capability. It has defensive avionics. It will have certified weapons delivery capability for the SRAM's, ALCM's, and gravity bombs. That's all in the price.

We have indeed made estimates on engineering change order rates of about 6 percent. We figure that is the proper one because we do have a configuration that is essentially here. We have set up a management team and a change control process. The Deputy Secretary is the final authority on the change board. So things will become hard to get changed.

Our experience has shown us if you start monkeying around with changes as the program gets into production that is where the cost accelerates.

Senator **Warner**. There is going to be a tendency as you further develop the ATB technology to try and transfer more and more ATB to the B-1.

Dr. **DeLauer**. I can't do it in an open session, but fortunately some of that will be restricted because of the nature of the difference in the technology. So that part will be fine.

No. I think the biggest tendency, Mr. Chairman, in growth will probably be people wanting to put more avionics on it and that is the part we must resist.

Now I have gone over every single line item on the list that the GAO covered and so did the Congressional Budget Office. We can submit our modifications to it or we can cover them here verbally.

Senator WARNER. Let's do it right now. Let's get it out. What is the figure you want to use?

Dr. DELAUER. I will let General Burke take care of it from here on and give me a rest. Go ahead.

General BURKE. I have got the CBO list, Mr. Chairman, and I might say their letter indicates that they were asked to cost out all of the items that had been covered by the General Accounting Office. I don't think they made a value judgment whether those were right or not, just what they would cost, depending upon the inflation rate.

They break them into three categories. The first has to do with questionable reductions, and here you get into the questions we discussed the other day of management judgments as to what is the right level to allow for the various tasks. We have the item we call engineering change orders in any major weapons budget, and that is for changes we are not clever enough to anticipate that have to come later.

And when we start our new program with a clean piece of paper we typically allow 10 percent when we are starting with a brand new design such as the ATB. We would give it 10 percent. In the case of the B-1B, which has an airframe that is 70 percent common to the old B-1 airplanes, engines that are 99 percent common with the old engines, avionics which, while new to the B-1, are still common largely with the B-52 offensive system.

Based upon that, we calculate that 6 percent was an adequate number and that is what we chose to allocate for that purpose. So that is our view of that.

Then there are some items, estimated learning curves, and that has to do with how quickly you believe that the workers will learn their job and be able to do it more efficiency. Honest men can and do disagree on that. I would say the learning curve we took was considerably less optimistic than that proposed by the manufacturers. It was consistent with our independent cost assessment but was not the most pessimistic number available. I think the GAO used that.

Reductions in avionics production estimates, that had to do with the definition of the avionics and the actual bids that we got. We are satisfied that number is correct.

We allowed in our calculations for anticipated savings from multiyear procurements on the understanding that if Congress wishes us to move in a multiyear procurement that that ought to be an obtainable savings and we allowed for it. If that assumption is wrong, the number will be incorrect.

Transfer of the component of engineering development, that has to do with the fact that when you have a brand new engine development, when you complete the research and development, you have a program called continuing engine development to keep that team together until you move into the component improvement program.

This is an engine which has been in development for some time. It is essentially the same engine as the derivative on a fighter engine. It is also the same hot section as in the CFM-56, and we do not see the need for that development.

There is a $300 million item having to do with peculiar support equipment. We allowed $1.8 billion of the total cost of $20.5 billion for what is called peculiar support equipment. That is all of the testing equipment unique to that particular system to maintain it.

We costed it out on our stândard method, that if we based these 100 airplanes at 6 bases and we used the standard 3-tier maintenance concept, as we do with F–16's employed around the world, we would need $2.1 billion for that support.

But we do not intend to do it that way. We will use some combination of a lesser number of bases and/or a lesser number of maintenance tiers. And we are satisfied that the $1.8 billlion is quite adequate for that purpose.

And just by way of perspective, Mr. Chairman, lest anyone think we have skimped on the support for the airplane. We have $1.1 billion set aside for spare parts, a total of $2.9 billion in support costs, which represents 13.5 percent of the total cost of this B–1 program, and that is about double what was in the 1977 B–1 program. It compares favorably with any program we have ever done.

The second major category was expenses and other program elements. First, that had to do with operational tests and evaluation, for which there is no estimate given. We do have 1,000 hours of flight tests funded in our estimate of $20.5 billion. We think that is enough to complete what was called development test and evaluation and the initial operation test development.

And then as a continuing category called follow-on testing takes place in operational units funded through the normal O. & M. accounts. And we are still doing operational tests and evaluation of B–52's, for that matter.

The engine component improvement program is an aggregated program in which we have tried to reduce the cost of ownership of all engines that the Air Force owns, and we will be doing that for the B–1 engine. We will not do it in the B–1 program. We do not separate for any program; we lump it all in there.

But the point to remember there is you do not put any money into that program until you can project a savings for it. The purpose of the component improvement program is to reduce the cost of ownership. It is intended to be a money savings and a net reduction in program cost and not an add to it.

CONVENTIONAL WEAPONS CERTIFICATION

We have included in our $20.5 billion the certification of coinage and delivery of conventional weapons that B–1B will carry when it enters the inventory. Again, as the years roll by, there will no doubt be additional qualifications for other new weapons. I think we qualified the B–52 on Rockeye just last year, and that is a process that goes on all of the time but is not included in the research, development, and acquisition charges.

Manufacturing technology enhancement is another money-saving approach. You put money in manufacturing technology after someone demonstrates you will be able to get savings that make that investment worthwhile. And again, that is an aggreagated item where we do all of the manufacturing technology work.

Base facilities improvement is another item. We do not believe we are going to need a large amount for that, because these are existing facilities for retiring B–52's which are much bigger airplanes. They already have adequate hangars. I do not think there will be much required there at all.

NUCLEAR WEAPONS CERTIFICATION

Again, included in the baseline is the testing and certification of the nuclear weapons the airplane will carry.

The third category is listed as potential additions, and these reflect judgments as to what is the mission of the airplane or the operational requirements. You can always add another gimmick to an airplane just as you can to an automobile, and you can always increase the cost.

These are all items we looked at and reviewed within the Air Staff, SAC, and OSD as well.

They list a second inertial navigation system. They have a very peculiar number there, $220 million for that. First, we do not intend to add a second inertial navigation system until such time as the airplane becomes primarily a cruise missile carrier.

Additionally, we will inherit some 75 inertial navigation systems from our retiring B–52D's.

Senator **Warner**. Can you transfer them right over?

General **Burke**. Yes, sir, you will have to do the integration, but the units themselves will move. And I do not understand the number, because we are paying about $200,000 apiece for that. Times a 100, that is more like $20 million rather than $120 million.

On the original B–1 design we did have a forward-looking infrared sensor. It was there to provide the crew with a better view of the outside world. The new B–1 design has a very modern advanced radar on it which will give them a very good view of the outside world by radar, and we simply do not think we need that forward-looking infrared system, although the airplane is capable of taking it as an addition should we choose to do that later.

Simulator development procurement is in this category. We have stated several times that we are developing a concept of training. We will require a simulator. We think $300 million is probably the upper bound on that. We would plan to do that in our simulator development and procurement line. We have a full-time simulator program office that does all of our simulation work now.

The full-scale fatigue testing in another item. We were testing the structural integrity of the airplane, which has already been tested to a degree beyond virtually any airplane I have ever seen, certainly more than any commercial airliner we would fly on.

It is our judgment we do not need that and should not buy it. It will not be flying at the supersonic speeds it once was. We have taken it to nearly three lifetimes of fatigue testing already.

Fuel tank and inerting system is a device we took and we put on fighters exposed to small-arms fire in repetitive missions. I think it has never been put on a bomber aircraft, and we do not plan to put it on the B–1.

Electromagnetic pulse testing is another item. The aircraft has been designed from the ground up to be hard to the electromagnetic pulse phenomena. We have verified that the components indeed are hard.

Senator **WARNER**. We have kept that R. & D. going. I remember funding that my first year here in the Senate.

General **BURKE**. Yes, sir. We do not have any concern that the B–1 as it rolls off the production line will be hard. What we wonder is how will it be after a year or so of the normal wear and tear in the field. And that is when we intend to take it back and test it.

The low-frequency/very-low-frequency communications, they say, has not been estimated. We have an estimate. It is about $30 million, and that was added back.

The two items in the Presidential strategic package that were added into the B–1 cost were the cruise missile carriage and this low-frequency/very-low-frequency communication.

Hardware testing, electronics, and support for additional weapons are order items. We are buying all of that for the weapons we carry in its early years, and for later years we add different weapons. We will have some changes, future improvements to avionics. I do not know how to address that. I have no idea what changes might be in order after the airplane has been in service 15 or 20 years.

And that is the total list.

Senator **WARNER**. As you scrub that list, what would you give them?

General **BURKE**. Nothing.

Senator **WARNER**. Not a nickel?

General **BURKE**. That is right.

Senator **WARNER**. That is a pretty tough decision.

Dr. **DELAUER**. You are right. That is the way we are going to run the program.

General **BURKE**. There are some things we do not disagree with, but they are not included in the B–1B costs. We do have to buy simulators, we will do component improvement programs, we will be doing manufacturing technology, but where we can see a payoff, and it will not be to spend more money; it will be to save on it.

Senator **WARNER**. So you will not give them a nickel on the whole list? That brings you back to your figure then.

General **BURKE**. The figure of $20.5 billion, which was furnished in the base year 1981 dollars, which Senator Levin correctly says is more in 1982, it is about $22 billion in 1982 dollars.

Senator **WARNER**. $22 billion in 1982 dollars for 100 airplanes?

Dr. **DELAUER**. That is right.

General **BURKE**. Yes sir, And under the OSD/OMB inflation assumptions, that is on the order of $28 billion in then-year dollars spread out over the life of the program.

Senator **WARNER**. I want to get back to the MX, and then we will basically go to questions. I want to check a few notes here.

So you refute any accusation that the costs have been changed recently to make the program more acceptable to the Congress?

Dr. **DELAUER**. We refute that.

Senator **WARNER**. Categorically?

Dr. **DELAUER**. Categorically.

Senator **LEVIN**. I do not know about refuting it, Mr. Chairman. They deny it.

Dr. **DELAUER**. I think we refuted it, Senator.

Senator WARNER. I will wait, Senator Levin, because I am sure you have a question or two on this subject, and you can pick the words you wish to use. It is clear to me.

Senator LEVIN. I did not want to correct the Chair. I will wait until the questions.

Senator WARNER. Have we drawn with sufficient clarity the parallel between the B-1 under the Carter program and the B-1B which is now the subject of the Reagan program, the differences between the two aircraft? Have we got that sufficient in the record?

Dr. DELAUER. I think the record is clear on that. If not, we will certainly provide it.

Basically, we have changed it from a supersonic operational configuration to one that is subsonic. We have redesigned the engine inlets to reduce its radar signature. We have a little heavier airplane; therefore, we have new landing gear. We are enlarging the forward bomb bay to carry cruise missiles. We are not touching the rear bomb bay. And then there are the avionics things that we have talked about in the configuration.

General BURKE. The biggest changes are in the avionics area. As I mentioned, the airframe is largely as it was before the engines and essentially the same. But the avionics have changed in a very large percentage, and that is a consequence of the fact that the pace and growth of aircraft electronics or avionics is very dramatic, and we wanted to put the best off-the-shelf avionics in that airframe but not develop a new one.

Senator WARNER. Did you try to run an analysis as to the cost of this in constant dollars versus, let us say, the B-1 versus the B-1B cost in constant dollars?

General BURKE. Yes, sir, we have done that.

Senator WARNER. What is that comparison?

General BURKE. You also have to allow for the fact that we were going to build 224 B-1's versus the 100 B-1B's.

Senator WARNER. You have made that adjustment, you have factored in the bigger program. And what is the comparison?

General BURKE. Let me ask Col. Jim Evatt. He does all of that analysis. Colonel Evatt is the special assistant for the B-1 program.

Colonel EVATT. Sir, the costs are quite comparable. We asked the Independent Cost Assessment Group to make the comparison between the 1977 costs and the costs in fiscal year 1981 dollars, and when you take the variation of the program then and there and match those up, the costs are within 3 or 4 percent.

Senator WARNER. In other words, the plane is at about the same cost.

Colonel EVATT. Yes, sir, when you make the adjustments for the various programs. As General Burke pointed out, we have more money in this program for certain aspects than we previously did on the original B-1 program.

Dr. DELAUER. We saved 7 years of inflation.

Senator WARNER. I understand that. Will this B-1B have significantly improved penetrability characteristics?

General BURKE. I think it will have substantially improved capability over the original B-1 program, and that is a combination of the reduction in its observability and taking advantage of that technology to the extent it can be applied, which makes a very fortunate marriage with the recent developments in electronic countermeasures, which I think have been extremely encouraging, and the B–1B will have greatly updated that kind of equipment.

Senator **Warner**. I will go over a few more questions so that this section of the record is tight. There may be some repetition.

How long will the B–1 be able to penetrate the projected Soviet air defense system?

Dr. **DeLauer**. The estimates will vary up to the mid-1990's, depending upon what the reaction of the Soviets will be and depending upon what our advances might be in future ECM capability.

So it will vary between 1990 and 1995, depending upon how bad they do and what target you talk about.

Senator **Warner**. That is important. I think you should stress that. We use the word "penetration" almost in the visual sense as we cross the shoreline. You and I recognize there are certain avenues of approach with the cruise missile system that are dictated by range, and also then defenses against the cruise.

So we may penetrate in some instances 100 miles, maybe 200 or 300 in other areas, so there is a good deal of variation in the word, what penetration means.

Dr. **DeLauer**. And what target you happen to be going after. They value certain targets very highly and they will put an awful lot of resources into defending.

Senator **Warner**. So while some areas of the Soviet Union may not be penetrable after 1991 or 1992, there are other avenues, ways into the 1990's

Dr. **DeLauer**. Forever if you want to come the other way.

Senator **Warner**. Of course, there is a correlation between targets of high value and——

Dr. **DeLauer**. And the degree of defense. Absolutely. They go hand in hand.

General **Burke**. And when we go into closed session we might offer some specific numbers.

Senator **Warner**. We will cover the basic questions again in closed session, but I think it is important to get as much on the public record as possible because this is the basic record that will be used in the debate in the Senate. Of course, I presume most of that debate will be open in the Senate. I hope it will be because I am very anxious for the American public to have a full grasp of this issue.

General **Burke**. I would just address Dr. DeLauer's point. From all I have seen, which is based upon the actual evaluations which have taken place with the fourth B–1, which has the ECM equipment on it, flying against American systems such as the F–15, AWACS and our radar missiles, and the assessments of Soviet advances in air defense over the next decade, it is my opinion that the B–1 as we are building it will be a highly effective penetrator well into the 1990's, and it would not surprise me if it turns out to go into the next century.

Senator **Warner**. Now, let's put the B–52 side by side on that penetration scenario.

Dr. **DeLauer**. No contest.

Senator **Warner**. No contest?

Dr. **DeLauer**. No contest.

Senator QUAYLE. When does the B-52 drop out, in your judgment?

Dr. DELAUER. It is a matter of projection. It depends, again, on the target, but it cannot handle high value targets now.

Senator WARNER. Today?

Dr. DELAUER. Today.

General BURKE. We have three different versions of the B-52. The B-52D's.

Senator WARNER. The G's and the H's.

General BURKE. The oldest ones, the D's, have not been kept up. They are teetering on the margin right now. That is why we propose starting to retire those aircrafts next year. They still play a role, an important role, but they are getting very near the end of their useful life. The G's and the H's have been modernized and I think we can probably count on them until the latter part of the 1980's as penetrators.

Senator WARNER. Let's take the third category of the ATB and put that side by side on penetration.

Dr. DELAUER. Based upon present design ambitions and what we have been able to achieve to date, we expect the ATB to be able to do better than the B-1B's.

Senator WARNER. Considerably better?

DE. DELAUER. Considerably better.

General BURKE. They both do a very good job.

Dr. DELAUER. Yes. You get into the range of probabilty of penetration of 90 percent plus. There is not a lot of room to do better.

General BURKE. The fact that ATB does a somewhat better job tends to be offset by the fact that the B-1 carries more.

Dr. DELAUER. It is a positive combination.

Senator WARNER. Just how important is penetration for the mission? Can't you compensate the lack of penetration by the use of cruise missiles with greater capability?

General BURKE. We are buying these aircraft primarily for deterrence of nuclear attack, and most people who have studied that problem believe that what deters best is that which puts at risk the things the Soviets value most. Some of those targets are better threatened with mannecd systems than with unmanned systems, cruise missiles or ballistic missiles. It has to do with imprecise locations and sometimes hard to find targets.

But over and above that, we would imagine using this airplane, given that it has the capability for that penetration, it would also indicate the capability for a whole host of nonstrategic roles, maritime and land attack as well.

Senator WARNER. Now, the IOC for the B-1 will be?

General BURKE. 1986.

Senator WARNER. When will the 15 aircraft be delivered to the Air Force?

General BURKE. 1986.

Senator WARNER. When will the 15 aircraft be mission capable?

General BURKE. 1986.

Senator WARNER. Now, Dr. DeLauer, let's return to the other elements of the President's package, specifically, the MX.

Dr. DELAUER. The MX land-based——

Senator EXON. Mr. Chairman, would you please explain the procedures to me? You just asked a series of questions and now we are going to the MX. What procedure are we following?

Senator WARNER. We want to let the witnesses cover the basic elements of the President's program. I just put those questions in to frame it up, and then we will go to questions by the membership.

Senator EXON. Thank you.

Dr. DELAUER. The strategic criteria for the land-based ICBM leg of the strategic package was the same critieria we used in every other element.

When we completed the land-based ICBM leg of the package, we used the same set of criteria: Is it survivable and does it contribute to the enhancement of the deterrent? Now, there is no question that the MX missile, the most modern missile under development at the present time in the world, does enhance our strategic deterrent capability due to its accuracy and its load-carrying capability.

There is no question that at this stage and as early as we can get it, which is very soon as compared to the D-5 which I covered before, and due to the fact that there now exists positive command and control to that particular leg of the Traid, the MX is a very, very important part of the deterrent posture and the problem of survivability.

It has been that problem which has plagued most people who have worked in that area for the last decade. We have looked at many ways to achieve survivability of a land-based missile system in light of the threat the Soviets have produced, which is high yield, highly accurate counterforce weapons. As their accuracy increased, their ICBM force continued to put at risk the survivability of our land-based missile force, particularly the Minuteman.

So in striving for survivability, many schemes, many designs, and many concepts have been entertained. I won't go through the litany of all the basing schemes that have been looked at. The previous administration, for reasons of their own, had decided that a multiple protective shelter system was the preferred choice.

Let me say that baby was not born without some difficulty. I was on the other end of the business, being a part of the Minuteman development program and at one time program director. We had looked at the whole question of how you could make the land-based system survivable under the threat of increased accuracy. We looked at the shell game, of which the multiple protective shelter system is an example. We looked at superhard capability, we looked at defense, and the Government carried on what I would call a modest ballistic missile defense program, one that was much less than the opposition had. They continued to press that very hard.

We have looked at the whole question of mobility in itself, actually looking at land-based systems in a mobile way. The mobility has been looked at in three different modes: road mobile, air mobile, and even rail mobile. We have looked at that system.

Senator WARNER. Is that with using just the MX missile or a smaller——

Dr. DELAUER. We hadn't decided on the MX at that time. That was using existing land-based systems. As a matter of fact, we had a derivative which was called MMRBM at one time years ago, and we stopped that. The problem always with mobile systems in the past has been to keep the counterforce capability, the high accuracy, at the same time under positive command and control.

I mean you didn't want to lose those two aspects of the land-based system if you went into some form of survivable mode. As a consequence, they always had some disadvantages, going through all of the different ways of superhardening them, burying them in mountains, putting them under water in the middle of the Great Lakes, and so forth.

At many times we have looked at all of these, and many of the citadel-type, the superhard type, fell short because they were not able to be used promptly. Now, that is a problem we still face except when the time comes that we have the D-5 deployed, we will be able to have a prompt capability in a diflerent form of missile system. St will be in our submarine missiles. So we have to look at the basing of the land-based system.

Now, the MPS system has always had critics. The critics existed in this room at times. The MPS system itself had a series of changes. Not less than 2 years ago when SALT II was being debated in these chambers, the MPS system was a lot different from what it ended up being a year later.

At that time we had the transporter going between shelters at almost the speed of light. The cost of that system was so high and it took up so much real estate that even the previous administration decided they had to make some changes. The Defense Science Board looked at that particular thing and came up with the latest configuration which used less real estate and did not put so much cost into the transporter, which was a very expensive item.

When the present administration came into office there were real questions about the ability of that design to survive. At that time the President asked the Secretary to establish an independent group to review MX basing. That is when the Townes panel was empaneled: They did the deliberation and came up with a basic conclusion which was that a multiple protective shelter system, in light of the ability of the Soviets to fractionate their land-based missile system—fractionate meaning having more warheads on existing boosters—was such that they could fractionate at a faster rate than the United States could build protective shelters.

Therefore, the protective shelter system was discarded as a nonsurvivable system under that threat. So now we had to find another solution, and it was clear that none was at hand. There were some recommendations by the Townes panel that we look at an airborne-basing mode with a long endurance.

They had some preliminary information given to them. That airborne patrol approach was recommended to the President. The question of increasing ballistic missile defense and defending a particular system was also an option which was looked at and studied by the Defense Science Board this summer under Tom Reed, the former Secretary of the Air Force.

That group came up with some conclusions with regard to combinations of some deception, some defense, and some hardness. Ballistic missile defense and the way to handle that particular problem was also recommended by the Townes Committee to the President.

The third recommended approach was deep underground, again as a survivable system, recognizing its weakness as a prompt reaction system. On the other hand, by that time they also recommended we do something with a D–5, and as a consequence that is what is in the package.

Now, those are the three modes that have to be studied for survivability. They all provide a modicum of survivability to a degree which we have to investigate them. Now, what do we do in the meantime?

Senator **Warner**. Before you drop that, has any consideration been given to adding a fourth category and looking at the deceptive concept?

Dr. **DeLauer**. I thought I covered that a little bit. I said in the ballistic missile defense, deception as a basis for defending will be looked at. It was recommended by the Defense Science Board that a combination of hardness, deception, and defense gives you the greatest degree of survivability. It is not necessarily the cheapest but it is the one with the highest degree of survivability.

The deep underground offers probably the greatest capability for survivability and the one that may have some attraction, particularly in light of the fact that we are including a D–5 in the total package. That has to be looked at.

The problem facing us is we want to develop that missile, we want to get on with it, and we have got to put it someplace. The Secretary, before this committee and the full committee, has certainly led us to believe he doesn't want to put them in a warehouse because that won't provide a capability.

So when we looked at how we could deploy them, we looked at the fact that we had to start retiring the Titans, the fact that the Titan bases were there, and the fact that the MX was designed explicitly to be able to go into Minuteman holes. That was a part of the design criteria as far as the missile was concerned.

We looked at the question of deploying them in those facilities and should we deploy them in those facilities in an unhardened state or a hardened state. It didn't make a lot of difference for overall survivability over time whether they were hardened or not, but it did provide a particular advantage which has not been stressed.

It turns out by hardening the initial deployment of MX, you make it survivable against the SLBM threat. Everyone always thinks of a counterforce thing as being ICBM's against ICBM's, but there is also a threat of SLBM's against ICBM's. By hardening them in the present program we will eliminate that vulnerability. It is small but finite.

The idea of putting them into existing silos as a deployment mode on a temporary basis is what we have proposed. We have no answer for the permanent basing of the MX. I am confident that with this total program we can indeed end up with some form of an acceptable survivable MX basing mode and we ought to continue MX development.

It is an excellent missile. It will be the best that we have ever produced. It is a capability that the Strategic Air Command likes to have. I think General Davis informed this committee of that. It has a long-term capability.

If the MX missile program stopped, as a matter of fact, the only ballistic missile program we will have in production will be that in the submarine-launched ballistic missile force. I don't think we want to be put in a position where this country does not have a development going, leading toward production of a replacement for our existing missiles.

Senator WARNER. How far along are you in the MX missile system, the percentage of money spent in R. & D? Where are you? Can you quantify it?

General BURKE. We are working toward the first flight in 1983. Let me give you a fraction of what has been spent.

General MCCARTHY. Approximately $1.7 billion in fiscal year 1980 dollars has been spent thus far on the missile development program, and all sections have been tested, Mr. Chairman, successfully, including the guidance system which has exceeded the design parameters. So we are confident that we will have the accuracy expectations we are designing for.

Senator WARNER. How much additional funding is required to complete the R. & D. program?

General MCCARTHY. In fiscal year 1980 dollars it is approximately $4 billion more to complete R. & D. on the MX missiles without including the basing costs.

Senator WARNER. Total program for development?

General MCCARTHY. For development only. R. & D. costs for the missile only.

Senator WARNER. And you are $1.7 billion expended against the $5.7 billion target.

General MCCARTHY. Yes, sir.

Senator WARNER. And time-wise how soon do you expect it to be completed?

General MCCARTHY. The first flight is scheduled in early 1983. Then there are flights that are about once every 2 months, and then after that, after the first six or so, then approximately one flight a month for the 20 flights that are scheduled.

Senator WARNER. When is your production decision date?

General MCCARTHY. Mid-1983, sir.

Dr. DELAUER. Our present program includes the money for production of 100 deployable missiles, which means a total production of about 230 missiles which will be produced in order to deploy the 100 missiles. The remainder will be produced for testing and other things. That is in the submission to Congress.

Senator WARNER. Does that wrap up your direct testimony?

Dr. DELAUER. That is a synopsis of it, Mr. Chairman.

Senator WARNER. Senator Jackson?

Senator JACKSON. I will defer to Senator Exon, who was here earlier.

Senator EXON. Let me ask a question of you, Dr. DeLauer, about the MX. Have you seen the Townes Commission report?

Dr. DELAUER. Yes, sir.

Senator EXON. Can you tell us what the conclusion of that report was?

Dr. DELAUER. The findings of the report were that a land-based missile system is nonsurvivable in an MPS mode. That is the basic conclusion of it.

Senator Exon. And what did they recommend?

Dr. DeLauer. I have to qualify my previous answer and add without BMD.

Senator Exon. Without what?

Dr. DeLauer. Without defense, a multiple protective system is nonsurvivable in the light of the Soviet threat of fractionization.

Senator Exon. How did they recommend the MX be deployed?

Dr. DeLauer. They recommended that three modes be investigated for future deployment. The first was airborne which was called the continuous patrol aircraft in their report. The second was increased effort on ballistic missile defense. A part of their committee recommended that some form of deceptive basing be accomplished with that missile defense but that was not unanimous. The third was deep underground basing. Those were the recommendations.

Senator Exon. Are you telling me it was unanimous in the Townes Commission report that the MPS system, which was designed before you people took office, would not survive?

Dr. DeLauer. The conclusion was the MPS system undefended would not survive. That was a unanimous conclusion of the report.

Senator Exon. A unanimous conclusion of the report?

Dr. DeLauer. As I read it, yes.

Senator Exon. I am very interested in seeing that report. You see, the testimony you are giving and the report which you just said the Townes Commission gave is in total contradiction to the man sitting to your immediate right and all of the military experts who have appeared before this committee for as long as I have been here. They have said exactly the opposite.

Dr. DeLauer. Senator Exon, I have been reading that testimony and I know that you have had a question in your mind about that in the past. I think I ought to let them answer for themselves, but as I read it the discussion centered around an assumption of the number of warheads that the Soviets might have through fractionization.

Now, I am not a big expert on the SALT Treaty, but much of this had to do with getting SALT II ratified. It supposedly had some limitation on the number of reentry vehicles that could be deployed. Is that the basis of that?

General Burke. SALT II had that.

Senator Exon. General?

Dr. DeLauer. Under that condition there is a survivability, but that treaty doesn't exist.

Senator Exon. That treaty doesn't exist? That is right. General, you didn't mislead me on your recommendations regarding the MX missile over the years, did you?

General Burke. No, sir.

Senator Exon. Did you mislead me in your testimony over the years here, the 2½ years that I have been here, that we should indeed go ahead with the MPS basing mode that Dr. DeLauer just referred to as the decision of the previous administration for reasons best known to them? The reasons best known to them, I suspect, were on the recommendations of you and all of our military leaders.

Am I misinformed? Am I putting the wrong emphasis on it?

General Burke. I think the recommendation represented the consensus view of the American Military Establishment, yes, sir.

Senator EXON. Is it true that that was based upon ratification of the new SALT agreement?

General BURKE. That argument was made. It was never made by me.

Senator EXON. You heard what he just said. Do you agree with him?

General BURKE. No, sir. I would put a different construction on that.

Senator EXON. Let me get into some other kind of an understanding. I was quite amazed, Doctor. I guess the most puzzling part of the all-new, all-encompassing first strategic policy that has been clearly defined, as the President's statement of a month or so ago has been described over and over again, is the most ridiculous proposal to spend $8 billion for hardening our existing holes.

It would seem to me that if we are going to take that chance it would be better to put them in the holes and take our chances. But let me pursue something, Doctor, which you said.

You said that at least we would be hardening these and they would be protected from SLBM's. Is that right?

Dr. DELAUER. That is right.

Senator EXON. Maybe we should go into closed session on this.

Dr. DELAUER. Could be.

Senator EXON. Maybe you know something about the increased accuracy of Soviet SLBM's that I as one member of this committee know nothing about. I had never heard that there was any chance that SLBM's of the Soviets would have any degree of accuracy which would make them a serious threat to our present holes.

Dr. DELAUER. At the present time you are absolutely correct, but 5 years ago that was the same case about their land-based missile systems. There is nothing to suggest that the accuracy of their SLBM force won't be increased just like the accuracy of our SLBM force. They have had incremental improvements in every one of their systems since 1958. To make the assumption that in 1981 they won't take advantage of their capability to be able to have more accurate systems would be, I think, a mistake, and we will not make that mistake.

Senator EXON. I think I understand your point. Likewise, it could be that the B-1 would not be a penetrator by the mid-1990's if they improve, so we are in an indefinite field there, are we not?

Dr. DELAUER. Well, we are in an undetermined field. It is a situation where we have to project people's actions into the future, some 15 years into the future. It has its problems in being completely precise.

Senator EXON. Is your concern that hardening the existing holes would give us some protection from SLBM's shared in the intelligence community, or is that something of your own?

Dr. DELAUER. I will not right now get into a debate about the intelligence community and myself. You might ask them that. We had one mismatch on that so far, and that is not in my job description right now. You ask the Intelligence Committee.

Senator EXON. Mr. Chairman, you tell me when my time is up. I want to go into this matter.

Is it your view, Doctor, or your view, General, that placing the MX in our present silos would be a violation of SALT II?

General BURKE. It can be done in ways that are clearly not in violation of any part of SALT I or SALT II. It could be done in ways that would require a modification of the language in SALT II. I don't think it could be argued that it was contrary to the spirit of those documents, but it might be argued that it was contrary to the letter.

Dr. DELAUER. I think in the case of the Titan there would be no problem at all in hardening them and staying within the limits of both SALT I and SALT II. Minuteman would be harder. We could not harden them to the degree that we have said, up to 5,000 psi, without in all probability having to renegotiate the volume restrictions, which, by the way, were our restrictions and not theirs.

Senator EXON. Well, regardless of whose restrictions they are, they are part of the treaty, are they not?

Dr. DELAUER. I understand, but I just wanted to make the record clear.

Senator EXON. Do you mean sometimes we get gored by our own oxen?

Dr. DELAUER. Sometimes we do.

Senator WARNER. Senator Exon, at this time I would like to call on Senator Jackson.

Senator JACKSON. I just have a couple of questions, Doctor. I think a couple of things come to my mind at this point. That is, the American people are wondering when we are going to get our act together on the MX. You know, this has been studied, reviewed, and now we come to a totally inconclusive situation.

I think it has an impact too on our allies in Western Europe. The feeling is that we are going to say we ought to deploy the cruise or the GLCM's, the ground-launched cruise missiles, but we cannot get our act together to provide for the basing mode on MX. I think we are getting hurt.

My feedback from our allies is, in dealing with the public, they say the Americans want us to have all of these new weapons deployed over there but they cannot agree on how they will deploy MX.

Do you see what I am getting at? It has been studied and studied and studied, and here we are in an inconclusive state.

How would you answer the letter?

Dr. DELAUER. How would I answer the letter? We have made up our mind what we want to do. We want to put them in Titan or Minuteman holes until we have a more permanent basing mode. We are not putting them in the warehouse.

Senator JACKSON. What is going to be the permanent base? I mean those holes, everyone knows they are there.

Dr. DELAUER. Everyone knows where the GLCM's are, too.

Senator JACKSON. Well, the GLCM's would be movable. They are mobile.

Dr. DELAUER. They are movable, but they have to be in place.

Senator JACKSON. I mean they can be moved around.

Dr. DELAUER. They can be moved around.

Senator JACKSON. And they can free up a lot of fighter bombers. Those airfields will no longer be as vulnerable in the sense of their going for our nuclear capability, our tactical nuclear capability in Europe. And we can move them into hayfields or whatever. There are all sorts of things you can do with the cruise missile.

Now, I am not trying to be critical here. I am just trying to say what I think is on the minds of a lot of people. One way or the other, they are saying: "Look, this has been studied for years, and all of these criticisms have been voiced. But here we are with a missile that we do not have a home for except to do the obvious. And why did you not do that a long time ago"?

Dr. DeLauer. We should have. I will not argue with you on that. I wanted to defend Minuteman in 1966.

Senator Jackson. Well, you know what I did. I led the fight for the ABM program and carried it by one vote.

Dr. DeLauer. I know you did. You and I discussed at that time the whole point of defending Minuteman but no one would buy it.

Senator Jackson. Well, we have a SALT problem.

Dr. DeLauer. Well, that was subsequent to that.

Senator Jackson. I understand. I understand. But I am trying to express, it is not a political point of view at all. I do not operate that way. But we have a problem here, and MX is really halfway done in over the wrong issues.

Dr. DeLauer. The issue on MX, the problem we have been facing, is the higher accuracy of the Soviet systems. We knew it was going to happen, and we did not get on with the survivable basing scheme. Let me submit, the MPS system was not a survivable basing scheme under the threats of the Soviets.

Senator Jackson. Outside of ABM, can you conceive of an acceptable survivable system?

Dr. DeLauer. Outside of ABM?

Senator Jackson. Yes.

Dr. DeLauer. I think a deep underground system is.

Senator Jackson. Deep underground?

Dr. DeLauer. Yes, sir.

Senator Jackson. Do you think that is our best option? I mean, having looked at everything?

Dr. DeLauer. After having looked at these for 20 years?

Senator Jackson. Yes.

Dr. DeLauer. For survivability under the Soviet threat, my own personal opinion is the deep underground is the most survivable.

Senator Warner. Would you yield for a point in that? We discussed the other day privately regarding this area, and there is no reason why we cannot bring this out in public. A group of Senators brought to your attention that the mobile system could well be the most survivable, but you feel that the social interface problem is insurmountable. Now if we were to go back and reexamine the social interface problem, is that an option?

Dr. DeLauer. Of course; no question about it. But the problem with a mobile system in this country is still a problem that we have of an open society. I would have to come here and explain to you why the high costs of security for a mobile system and the ability to be able to do it on a 24-hour basis. It would be very expensive.

Senator Warner. Now, let us compare Germany. There, in a sense, is an open society much like ours, and yet they have an acceptance of their mobile systems. As a matter of fact, there are——

Dr. DeLauer. That is right, but not their strategic systems. The Pershings are pretty well secured. Before that, the Lances were under pretty tight security. You had soldiers around them all of the time. That is an expensive proposition.

Senator **WARNER**. At the home base, so to speak.

Dr. **DELAUER**. Yes; that is right. When they moved during a particular movement, they also had high security.

Senator **WARNER**. Would you be willing to reexamine the mobile system if we, the Congress, felt, in our judgment, that the social interface was resolvable?

Dr. **DELAUER**. If I could get this MX program ongoing, I will examine that one, too. One more does not matter. I would be happy to. I have the fellow right over here who will put it on the list.

General **BURKE**. It would have to be with a smaller missile, though.

Dr. **DELAUER**. Yes; you could not do it with an MX.

Senator **WARNER**. I understand.

Senator **JACKSON**. Mr. Chairman, that is all I have. My concern here is the MX in terms of making a decision without delay. I think that I am pleased with the report here on the testing dates that you have suggested in 1983. And I think it would be a tragedy if we do not go ahead with the system. The public is getting the idea that the MX itself, the missile, you see, is bad, because of the big argument over the basing mode. And that would be a tragic development if the public got the idea that because they did not like the basing mode, you do away with the missile.

You and I would say that that would be——

Dr. **DELAUER**. That would be tragic.

Senator **JACKSON**. Unfortunate.

Dr. **DELAUER**. It really would be unfortunate.

Senator **JACKSON**. But that is what this is building up to, unless we get on with the program.

Senator **WARNER**. Senator Quayle?

Senator **QUAYLE**. Do we have any money in the 1982 defense appropriations bill for the hardening of the silos?

Dr. **DELAUER**. Yes, we do.

Senator **QUAYLE**. How much?

General **BURKE**. Not in 1982. Just preliminary design.

Dr. **DELAUER**. Preliminary design work is all we would be doing during that period of time.

Senator **QUAYLE**. What is the overall time schedule for hardening, presuming preliminary design work in 1982?

General **BURKE**. 1984 would be the first actual construction.

Dr. **DELAUER**. Yes. We would probably need the money in the 1983 budget. It is in the 1983 budget, our 1983 budget.

Senator **QUAYLE**. Is it in your 1983 budget?

Dr. **DELAUER**. Yes.

Senator **QUAYLE**. And completion of the hardening of the silos would be in 1986?

Dr. **DELAUER**. It is about that time.

Senator **QUAYLE**. And you would install the missiles in the hardened silos in 1986?

Dr. **DELAUER**. We would start deploying the missiles at that time, and we would do the testing.

Senator **QUAYLE**. What is the cost of hardening the silos—$8 billion?

Dr. **DELAUER**. No.

General BURKE. That is not the cost of hardening.

Dr. DELAUER. That is the cost of the basing; $8 billion.

General BURKE. The total cost of putting them in silos, most of that is consumed just by putting them in the silos. That requires a lot of new equipment to be developed and built.

Senator QUAYLE. But how much is for the actual hardening and changing of the silos?

Dr. DELAUER. $10 to $15 million for silos.

Senator QUAYLE. What is the aggregate of that?

Dr. DELAUER. It depends on your deployment.

General BURKE. About $800 or $900 million.

Senator QUAYLE. I would like to go back to the B–1B/Stealth discussion. Are you saying today that the B–1B will not be able to penetrate the Soviet Union until the mid-1990's?

Dr. DELAUER. Based upon our postulation of what the overall improvements in the threat would present, yes, sir.

Senator QUAYLE. Why did Secretary Weinberger say the other day that the latest date would be 1990?

Dr. DELAUER. I was trying to explain that. He was being careful not to create the impression that someone could say he was dead wrong if they postulated a defense that would be higher. As we talked about earlier, the question of penetration should not be discussed in such broad generalities. There are places that you would be able to penetrate to in the Soviet Union, probably forever.

Senator QUAYLE. Well, certainly, you can walk across State line if you want to, and I suppose you could call that penetration.

Let us talk about critical targets that the Soviet Union wants to defend. Assume they have a radar system. Are we going to be able to penetrate such targets until the mid-1990's? I mean those critical targets that the Soviet Union goes all out to protect have a lookdown shootdown capability incorporating the most sophisticated radar and air defense system they have. We will be able to penetrate those targets in the mid-1990's.

Dr. DELAUER. In some areas, yes. But we will not be able to do that throughout their whole defense systems in that period of time.

Senator QUAYLE. But in some areas, yes?

Dr. DELAUER. Yes, in some important areas, too.

Senator QUAYLE. Like what?

Dr. DELAUER. Penetration rules are classified, sir.

Senator QUAYLE. What critical targets will we be able to penetrate to through that route?

Dr. DELAUER. If you want to get into the classified session, I would advise it. If we want to talk about Soviet capability and our penetrability, I think we should go into closed session.

Senator QUAYLE. I would rather pursue this in open session, because I think that is where we will stay for a while.

What is the function of the B–1B, the primary function?

Dr. DELAUER. The primary function is to act as the manned bomber leg of the nuclear deterrent.

Senator QUAYLE. On strategic missions?

Dr. DELAUER. Strategic, of course.

Senator QUAYLE. That is its primary function?

General BURKE. But it is a multirole bomber, as we were directed by Congress to report back. And it has, in addition to its strategic nuclear role, a great deal of conventional capability both for land and sea attack. And it will be a cruise missile carrier and ultimately replace the B-52 in that role.

Senator QUAYLE. Over its lifetime, which is, what, 30 or 40 years?

General BURKE. [Nods affirmatively.]

Senator QUAYLE. What will be its primary role? Will we use it conventionally? Should we focus on the conventional tactical role, or are we going to continue to say it also has to be a penetration bomber and be able to penetrate the Soviet Union?

General BURKE. Initially, it will be used for strategic nuclear alert as a part of our strategic deterrent force, but at the same time immediately available for use in nonnuclear roles. And that is the way Presidents have typically used their bomber forces in the past. President Nixon had no hesitation in taking the B-52's off nuclear alert and sending them out to Southeast Asia to prosecute that war. And before him, in Korea the same was done with B-29's.

Dr. DELAUER. But the B-52 has only been used in a shooting war in a tactical role. That was the heart of our manned strategic force for 30 years. Yet the only time it was used in anger was in a tactical role. So who knows what the situation would be.

Senator QUAYLE. So, in all probability then, the B-1B would be used more in a tactical war than in strategic or nuclear wars?

General BURKE. In terms of hostile use, our actual application of force. But day in and day out it will be sitting there on alert as a part of our strategic nuclear deterrent.

Dr. DELAUER. It is a part of the deterrent force. The deterrent force has to be credible to be a deterrent force. To be credible, you have to be able to demonstrate you can use them. That is not the case with the B-52's now. We have a problem. They are not a credible leg of the Triad.

Senator QUAYLE. If you could improve the IOC on the Stealth, if you could choose between the Stealth or the B-1B, which would you choose?

General BURKE. Well, first, I do not think we can up the IOC.

Senator QUAYLE. I know that. But I am saying if you could.

Dr. DELAUER. But Senator Quayle, that is a "when did I stop beating my wife" question. We are not going to up the IOC, because it is not the prudent thing to do. I tried to explain before that you people have been directing us for years to take particular courses of action on our acquisition program, and we will do it that way. We have finally got the message. One of them is that we will not take unproven technology and shove it into a development and production program before its time.

Senator QUAYLE. I realize all of the caveats. But the question is——

Dr. DELAUER. That is not a caveat. That is a statement of what our plan is.

Senator QUAYLE. OK. If you had to choose—well, let me phrase it this way. When the ATB and the B-1B will be available will we continue building B-1B's or what will we do?

Dr. DELAUER. Our present plan is to have a force of each.

Senator QUAYLE. But that is basically because you do not have the early IOC, the Stealth. When you have both, are they going to have different functions, different responsibilities?

Dr. DeLauer. That is not true.

Senator Quayle. They are not going to have different functions and different responsibilities? They are basically the same?

Dr. DeLauer. I do not know how that SAC commander at that time and the people——

Senator Quayle. Basically, you are talking about the same capability?

Dr. DeLauer. The same capability, that is right.

Senator Quayle. The same capability, same function, same missions.

Dr. DeLauer. Probably against different targets.

Senator Quayle. Probably against what?

Dr. DeLauer. Different targets.

Senator Quayle. Probably against different targets?

Dr. DeLauer. Yes.

Senator Quayle. Well, how much different are these planes going to be, the B–1B and the Stealth?

Dr. DeLauer. When we get into the closed session, I will tell you.

Senator Quayle. Is it a significant difference or a minor difference?

Dr. DeLauer. A major difference.

Senator Quayle. A major difference in certain areas? It goes both ways?

Dr. DeLauer. It goes both ways.

Senator Quayle. But the real difference would be the targets. It would be distinguishable as far as functions, missions, and that sort of thing?

Dr. DeLauer. Probably the targets. I will talk to you in closed session about that.

But, look, we do that now. We have a B–52 force, and what have we got? We bought the FB–111's. We have FB–111's in our force. We have a two-bomber force right now. Unfortunately, we never bought them at the same time so they could compete against each other. But we have a two-bomber force.

Senator Warner. Senator Quayle, your time has expired.

Senator Quayle. Thank you.

Senator Warner. You will have additional time in closed session. Senator Levin?

Senator Levin. Thank you, Mr. Chairman.

On October 5 Secretary Weinberger said our vigorous ATB program will lead to that plane's deployment under current plans, beginning in 1989, within 1 month. That has slipped by I do not know how many years.

Now, when we look at the penetrating capability of the B–1, just last Friday Secretary Weinberger said the following in response to Senator Exon's questions: "I think there is no question whatsoever," quoting Secretary Weinberger, "that we will not be able to use the B–1 as a penetrator after 1990. If it goes to 1992, that will be a little extra dividend."

Today we have General Burke telling us he would not be surprised if it went to the 21st century.

Dr. DeLauer. That is right.

Senator Levin. I think if we meet often enough, Mr. Chairman, as a strategic subcommittee, I think we are going to do wonders for the penetrating capability of the B–1 bomber. In 4 days we have added 5 to 10 years' penetration capability.

And I would hope the chairman would consider scheduling a meeting for next week, because I would not be surprised if they say it was the 22d century.

Senator WARNER. Are you aware, Mr. Levin, that the Secretary of Defense sent over a letter?

Senator LEVIN. Yes, I am.

Senator QUAYLE. I am not aware of it. What did he say?

Senator LEVIN. Well into the 1990's.

Senator QUAYLE. They have probably been getting some bad publicity on this, so they changed their mind or something.

Senator WARNER. Gentlemen, gentlemen, if I may read the operative paragraph of the Secretary of Defense's letter, dated November 10, addressed to the chairman, I quote:

> Tests against advanced-technology air defenses indicate a high degree of success with these techniques. DOD analyses based upon the results of these tests indicate the B–1B will have the capability to penetrate anticipated Soviet air defenses well into the 1990's in a multitude of deployment modes and to perform effectively as a cruise missile carrier and as a conventional bomber into the next century.

Thank you, gentlemen. That copy should be made available to everyone.

Senator LEVIN. Well, today we have added another 5 years to that, because General Burke has said he would not be surprised if it penetrates into the next century. So my comment still stands, even with Secretary Weinberger's correction.

I do not think you can explain that, except to say that he did not mean what he said or he was wrong. Your explanation, frankly, I could not even explain to someone who was not in this room a few minutes from now as to how you can say Weinberger's statement of last Friday is consistent with what you say today.

But I will not press that, because there are other incredible parts of the B–1's penetrating capability. You tell us today that the B–1 is 90 percent as good a penetrator, 90 percent as good as ATB. Why build the B–1 if it is 90 percent as good a penetrator? You say that it has other capabilities besides penetrating capabilities which are even better than the ATB.

Next, one reason presumably to do this is so we will have healthy competition. We want to have two bombers going at the same time.

Dr. DELAUER. Not healthy competition, just competition.

Senator LEVIN. And then you say Congress will decide which one to go with.

Dr. DELAUER. I did not say that.

Senator LEVIN. Those are your words: "which one to go with today." We do not have a choice of which one. You are telling us to go with both. Why not give us three bombers?

Dr. DELAUER. I do not get the gist of this question.

Senator LEVIN. You are not telling the Congress that you are giving us the option between two bombers; you are telling the Congress you want to go with two bombers.

So your words today that Congress will decide which one to go with are not really what you are suggesting to Congress.

Dr. DELAUER. I did not say that.

Senator LEVIN. You are suggesting to Congress that we go with both. We will let the record speak for itself.

Then you say the B-1 will force all kinds of expensive air defense on the part of the Russians. The Stealth bomber will do that and more.

Dr. DELAUER. Not as soon.

Senator LEVIN. But it still will force the Russians within a few years thereafter, within 5 to 10, maybe 3 to 10 years thereafter, to do the same air defense, depending upon which day you testify, the same air defense plus.

So I think the arguments about all of the cost of the air defense which the Russians will have to engage in is poppycock, because you are proposing a Stealth bomber, which I happen to support, which will force them to do the same air defense you described plus much more.

General BURKE. I think there is quite a difference, Senator.

Senator LEVIN. All right, let me just complete my statement. In terms of the penetrating capability, in terms of the arguments about competition, we ought to go with two so we have competition. In terms of the air defense that we are going to force, in terms of the 90 percent as good a penetrator, I find all of those statements incredible. And I think they diminish the proposal of the administration very severely.

Next, the IOC and the B-1, the GAO told us it becomes mission capable, as I remember, in 1987. General, you said 1986 today. Would you disagree with the GAO?

General BURKE. I would.

Senator LEVIN. Now let me talk about the cost. I take it from what you told the chairman today that you will not concede that the CBO is right on any one item. Every single one of their items that they say are needed, you disagree with. Is that correct, Secretary DeLauer?

Dr. DELAUER. No. What we said is some of the things the CBO said ought to be in the program we said should not be in the program.

Senator LEVIN. Are there any they say should be in that you agree should be in?

Dr. DELAUER. Yes, and we have them funded.

Senator LEVIN. They are part of the 20.5?

Dr. DELAUER. Or in another line element in some other part of the Air Force budget.

Senator LEVIN. Could you pull out all of those other line items for the record so that we can see where you have put other costs to the B-1 that you say belong in other line items that the CBO says should be part of the——

Dr. DELAUER. It was covered in General Burke's——

Senator LEVIN. There is nothing other than what you said, General Burke?

Dr. DELAUER. That is right.

[The information follows:]

OTHER COSTS TO THE B-1 IN OTHER LINE ITEMS

The B-1B baseline program is structured to insure that our requirements are met for the foreseeable future. No additions will be made to the B-1B program outside the acquisition and operating concepts on which the $20.5 B (fiscal year 1981 dollars) budget is based. Strict change control procedures, streamlined management, and prompt reporting of programmatic issues have been directed by DEPSECDEF.

Particular management attention will be paid to limiting cost growth in the airframe, support equipment, and avionics areas. No change to the presently planned B-1B acquisition program or major changes in configuration will be made without DEPSECDEF approval. Simulators will be funded within the simulator program element.

The primary line items that are not funded in the B-1B program element will be accommodated as they are on all other major weapon systems, within general Air Force funds programed for these purposes. These include:

Engine Component Improvement Program—funded under program element 64268F, Aircraft Engine Component Improvement Program. The baseline B-1B program includes engine RDT&E funding through fiscal year 1986 in the amount of $276 M (fiscal year 1981 dollars). This program provides significant benefits in engine technology and resultant enhancements that are applicable to engines used by many different aircraft. By funding these improvements in one program, cost efficiencies can be more optimally realized.

Production Facility Improvements and Manufacturing Technology Enhancements—funded under program element 78011F, Industrial Preparedness. This program element covers initiatives that are applicable to, and benefit, many programs that are in the development and production phases of their acquisition. Thus, funds are contained within one program element for maximum visibility, and cost efficiencies are obtained by having several programs benefit from the results of these efforts.

The DOD has utmost confidence in the baseline program estimate. This budget represents a conscious, reasoned program based on substantial development work, including nearly 2,000 hours of flight test experience with four aircraft.

Senator LEVIN. Let us talk about the CAIG estimate of last week. We understand CAIG gave us an estimate of $28 to $29 billion in 1981 dollars last week. And there was a discussion with the Secretary last weekend. Did you provide us the CAIG estimate, the cost analysis improvement group's analysis, of last week?

Dr. DELAUER. No.

Senator LEVIN. Was there one?

Dr. DELAUER. There was an exercise run by the cost analysis improvement group in the Defense Department, and it came down with our other analysis we sat down and covered it line item by line item. We came up with the 20.5 number, and that was the configuration and the budget we are going with.

Senator LEVIN. And what was the CAIG estimate before you deleted out some item?

Dr. DELAUER. I do not know. I cannot recall right now exactly what it was. They had some line items in there we also took out.

Senator LEVIN. I understand. But can you submit for the record what that estimate was? Was it more than $20.5 billion?

Dr. DELAUER. It was.

Senator LEVIN. Was it more than $22 billion? Was it more than $22.5 billion?

Dr. DELAUER. I do not remember.

Senator LEVIN. We would be very much interested in that estimate, Mr. Chairman. That is an estimate which has become very much a part of the public record. This is an estimate of a group internal to the Air Force that is supposed to give an independent analysis of cost. I believe that estimate was $27 to $28 billion in 1981 dollars.

Does that sound about right?

Dr. DELAUER. I do not recognize that number, Senator.

Senator **Levin**. Were you present last weekend when the discussion took place?

Dr. **DeLauer**. I was present last week when we went over the numbers, and there were a whole category of numbers presented. There was no CAIG estimate, as such.

Senator **Levin**. What was it?

Dr. **DeLauer**. There was an estimate given by P.A. & E. by one gentleman in that who has been working on the program. He had line elements of different elements of cost much the same as the CBO. When we went through that and said, "No, this is not going to be done. No, this is not going to be done. Yes, this will be done, but it will be done under this line item," we came up with the same kind of conclusion that was gone over by General Burke just a moment ago.

Senator **Levin**. Is CAIG a part of P.A. & E.?

Dr. **DeLauer**. Yes.

Senator **Levin**. CAIG is a part of it?

Dr. **DeLauer**. Yes.

Senator **Levin**. So would you give us that estimate that they brought in to you, the P.A. & E. itemized list? Would you bring that to us so we can include that in the record?

Dr. **DeLauer**. I will not commit myself to bring it. I will talk to the Secretary and see whether he wants me to have it brought over.

[The information follows:]

As the Secretary of Defense indicated in his November 5th testimony, we estimate the acquisition cost of the B-1B program to be $20.5 billion (in fiscal year 1981 dollars). This estimate was established after careful consideration of a number of inputs on the possible cost of the B-1B acquisition program. Moreover, we have taken a series of management steps to ensure the B1-B acquisition cost does not exceed that figure. These include freezing the present acquisition and operating concepts, controlling the aircraft design so as not to exceed the presently programmed 6 percent Engineering Charge Order Factor, developing a management plan to achieve the cost and schedule goals, and requiring the Secretary of the Air Force to submit quarterly reports to the Deputy Secretary of Defense describing progress in carrying out the B-1B program within budget cost. No changes are to be made to the B-1B program without the approval of the Secretary or Deputy Secretary of Defense. The Under Secretary of Defense for Research and Engineering and the OSD General Counsel are to review all B-1B contract negotiations on a continuing basis.

The cost reports are internal working documents not circulated outside the Department. The B-1B program has been added to the Selected Acquisition Report (SAR) listing and as such cost information will be furnished to Congress on a quarterly basis.

Senator **Levin**. I think we ought to make a formal request for that, just as we made a request for the Townes Commission report. I think we ought to see the CAIG P.A. & E. estimate, call it line-item total, whatever document you refer to here, that was discussed last week in the DOD.

I think we ought to see that so that we can know what items they had on their list that the DOD or the Air Force is excluding and what their estimate of the total cost was.

General **Burke**. In the course of their examination, they looked at everything on the GAO list, which showed the same items on the CBO list.

Dr. **DeLauer**. They are the same items.

Senator **Levin**. They did not have any items on their list that are not on the CBO list?

Dr. **DeLauer**. I do not remember any. Do you?

General **Burke**. No.

Dr. **DeLauer**. No; I do not remember any.

Senator **Levin**. Did that discussion take place with the Secretary of Defense?

Dr. **DeLauer**. With the Deputy Secretary of Defense, myself, and the head of P.A. & E.

General **Burke**. The comptroller.

Dr. **DeLauer**. Also the comptroller.

Senator **Levin**. Just to make it clear for the record, you remember the discussion, you remember which items were or were not on the list, but you do not remember the total?

Dr. **DeLauer**. I do not remember the total.

Senator **Levin**. You do not remember the total?

Dr. **DeLauer**. No.

Senator **Levin**. Do you remember whether it was over $25 billion?

Dr. **DeLauer**. I cannot remember that.

Senator **Levin**. Mr. Chairman, I am not a member of this subcommittee. I do not know whether I have a right to ask this question. If I am out of order, I am sure the Chair will so rule.

But I would ask the Chair to make a formal request for that document which was presented to the DOD, the Under Secretary last week, by the P.A. & E.

Senator **Warner**. Well, historically, those documents have had, if not a legal, certainly a customary confidentiality, and I will have to take that under consideration.

Senator **Levin**. My last question, if I have a minute, is the simulators. I am curious as to why that was taken out and put in a separate line item which you do not count in the $20.5 billion.

General Burke, you were kind enough to give me that $300 million last week and you will not give the chairman an extra nickel today, but you gave me $300 million last week. You said it was $20.8 billion, and now you are taking away my $300 million.

General **Burke**. I have not deviated from what I said last week. I pointed out again that we are going to buy a simulator. It will cost—I think the upper limit is $300 million. That is fairly identifiable with the cost of buying and operating B–1B's.

However, perhaps 4 or 5 years ago, the Air Force, because of the importance of simulators, took the simulator development out from under the weapons system development and created a separate office for that. And we propose in the future to fund the simulators under that element as a management approach. We think it is the right thing to do.

There is no ambiguity. There is something approaching $300 million the taxpayers will spend for a simulator, which is clearly for the B-1B program.

Senator **Levin**. That is all? Are there any other items like that which are pulled out and put in other line items?

Dr. **DeLauer**. Well, there was——

General **Burke**. If I may, Senator, this was not pulled out; it never was in there.

Senator **Levin**. Are there any other items that are clearly identified with the B–1 which would not be needed but for the B–1 which do not appear in your $20.5 billion estimate in constant 1981 dollars?

General **Burke**. Well, we have discussed things like manufacturing technology, component improvement programs.

Senator **Levin**. Since my time is up, would you provide all of the items connected with the B–1's which would not be needed but for the B–1 which are not in the $20.5 billion but which, in your view, will have to be funded?

General **Burke**. In terms of the research, development, and acquisition of the aircraft?

Senator **Levin**. No; all items.

General **Burke**. It gets very speculative when you are talking about keeping an airplane 30 years.

Senator **Levin**. No; I mean until the point it is deployable

General **Burke**. [Nods affirmatively.]

[The information follows:]

Cost Acquisition Program

The acquisition cost estimate for the B-1B includes the cost of research, development, tests and engineering. It is based on procurement of 100 aircraft and includes cruise missile carriage capability. In accordance with the Deputy Secretary of Defense memorandum, 4 November 1981, Subject: B-1 Program; no additions will be made to the B-1 program outside the acquisition and operating concepts on which the $20.5B (fiscal year 1981 dollars) budget is based.

Strict change control procedures and streamlined management policies will be adhered to and no change to the presently planned B-1 acquisition program or major changes in configuration will be made without Deputy Secretary of Defense approval.

Simulators and training devices for the B-1B program will be funded within the separate program element established for simulators and will be managed by the Air Force Simulator Program Office. The Air Force expects $300M (fiscal year 1981 dollars) to be the upper limit for these training aids.

Other items, such as manufacturing technology, engine component improvements, industrial preparedness, and any military construction needed will be accommodated within the general Air Force funds programed for these purposes. These items are funded in other than the weapon system program element since they are not specifically related to either RDT&E or procurement of the system.

The B-1B baseline program is structured to insure that the President's strategic bomber program requirements are met for the foreseeable future. The program structure recognizes the volatile nature of technology, particularly in the avionics area, and the design of both the offensive and defensive suites allows for growth. Additional capability can be accommodated as operational requirements dictate.

It is not possible at this time to provide cost impacts of any future changes that might occur since they have not yet been defined and it would be highly speculative to assume the specific nature of these changes.

Senator **Warner**. Each of us will take a few more minutes in open session.

My first question is to both panelists. The road mobile system. I anticipate there will be some debate on that. And I desire to have the record adequate.

General Burke, why did the Air Force not include the road mobile ICBM as an option?

General **Burke**. There are some security and safety aspects to that which I think are fairly obvious. The major concern all along has been with whether or not that was acceptable and tolerable to the American people. And that is obviously not a technical question. It is a political question, and you are certainly in a better position to answer that than I.

In the past, including votes on the Senate floor, there has been no enthusiasm for that, I think based upon the belief that it would not be acceptable. But maybe that has changed. It is not a bad solution, if that is tolerable and if we can work out the security and safety.

But the great danger I have always thought in that thing is that if we were barely able to eke out that solution and put it out there and no one was very happy about it, if after a couple of years we had some sort of an unfortunate circumstance, an accident or an attempted hijacking, then I guess there would be a great hue and cry, "Take those things back on garrison and lock them up." And then you are in the worst possible circumstance. You have all of that lucrative target in one point.

So even if we start it, I do not know how we could be assured that we could continue that for the life of the system.

Dr. **DeLauer**. It is not an easy system to design. You get it in what you call an economic package, and then you have a real problem with its deployment.

You have to be careful about being able to move them around in particular cases. So a lot of work has been done on it.

When we looked at the MMRBM which was to be deployed mobilely in Europe, you know, that was canceled.

Senator **Warner**. General Burke, returning to the Towne's panel report, what is your interpretation of the report about the MPS system?

General **Burke**. I read that report in a fairly cursory manner because it had been overtaken by events at the time I read it and I'm not sure my recollection is all that sharp. But I think their basic thrust was the country should not adopt the strategy of seeking to build shelters to counter the potential of Soviet warheads.

Senator **Warner**. Senator Exon?

Senator **Exon**. Thank you, Mr. Chairman. Just a couple of questions.

Dr. DeLauer, as I am sure you remember, General Ellis, the former commander of SAC——

Dr. **DeLauer**. I knew him well.

Senator **Exon**. Well, he suggested we turn to the FB–111B/C as the interim bomber between now and the development of the ATB. Did you review that and, if so, what was your conclusions and why did you reach it?

Dr. **DeLauer**. Yes, sir. There were two or three elements of the review that we looked at. One, it was certainly more than a minor modification. It was a reasonably major modification and it had a very short lifetime. It would only be in the force for a short period of time.

Senator **Exon**. Are you talking about as a penetrator now?

Dr. **DeLauer**. Yes, and it would be earlier than the early 1990's.

Two, we had to take them out of the tactical air force thereby reducing the force structure there, so by the time you put additional money in to build the tactical force structure up you were ending up spending quite a bit of money on an interim solution.

As you might remember, General Ellis' No. 1 case was for the urgency. He called it the bathtub and he wanted something to fit in there very, very quickly. That was his solution.

I think to a degree General Ellis—I can't put myself in his thinking process—had a higher degree of confidence in getting that ATB sooner than I do.

Senator **Exon**. Than you do?

Dr. **DeLauer**. Other people, even the Secretary of the Air Force at the time, Hans Mark, had a different point of view, as you know.

Senator **Exon**. Let me go into something. I'm not sure this can be covered very extensively in open session, but when we look, although our Triad is important, at where we are going to get from point A to point B, we maybe have to have some slippage along the line.

Did you look at the possibility of relying a little more on our submarine-based systems, particularly the Trident and the new Trident II missile? I don't know whether this is classified or not. You and I know when it's supposed to be operational, which seems to fit into this general scheme.

Did you look at that as a possible interim solution if we were going to leapfrog from the B–52 to the Stealth technology?

Dr. **DeLauer**. Do you mean use the D–5 capability in place of bombers? What turns out, the best we can do in D–5's with the production rate of the Trident boats themselves, that date you are talking about can be pushed up hardly at all.

Senator **Exon**. It couldn't be done.

Dr. **DeLauer**. It couldn't be done.

Senator **Exon**. I want to go into that, but I think we should wait until closed session.

Senator **Warner**. Senator Quayle, do you have a question?

Senator **Quayle**. I have this letter you gave me. It says the tests against advanced technology air defenses indicate a high degree of success with these techniques, it says, well into the 1990's.

When were these tests accomplished? Does anyone know?

General **Burke**. Yes; they have been done within the past couple of years, 1½ years or so.

Senator **Quayle**. The past year, 1½ years?

General **Burke**. [Nods affirmatively.]

Senator **Quayle**. Are you ready to go into closed session?

Senator **Warner**. One question and then we will go into closed session.

Senator **Quayle**. Go ahead.

Senator **Warner**. Senator Exon, you raised a very important point. I caught it. Both of us did. That is, your evaluation of the B–1 will have attributes of penetration equivalent to the ATB's.

Senator Exon and I understood your statement to be on the order of 90 percent of the potential achievable by the ATB. Have I stated that correctly, Senator Exon?

Senator **Exon**. Yes. I think you did. And Senator Levin brought that up. But I don't think we ever got the answer.

Senator **Warner**. Now I want to give you a chance to answer, because that will be brought on the floor.

Dr. **DeLauer**. Can I answer that in closed session, Mr. Chairman?

Senator **Warner**. Can you give us anything in open, because——

Dr. **DeLauer**. You have to remember——

Senator **Warner**. You have to be the judge. If it can't be done in open, it can't be done.

General **Burke**. We can say it's at a point in time, and time will favor the ATB over the B-1.

Dr. **DeLauer**. Because remember, the capability of the B-1 is a combination of configuration plus ECM. Now as they get handled they start handling the ECM.

Senator **Warner**. Do you mean "they," meaning the Soviets as they begin their retaliatory or defensive air system?

Dr. **DeLauer**. That's right. Whether they will be able to handle the electronic countermeasures is something speculative, but they will be working on it.

The next question is, as you go to ECM, can you go into something on top of that. The advantage of the B-1 is its configuration, such that it permits us to use a lot of advanced techniques in countermeasures.

When we get into closed session I can talk about a couple of things. I don't want to talk about it here.

Senator **Warner**. As I understand the classification, there is a point in time in which the B-1 possesses 90 percent of the capability of penetration with the ATB. But as you go further out into the nineties and on into the year 2000, that 90 percent begins to drop off and the ATB becomes the more capable?

Dr. **DeLauer**. I want to be sure we characterize the criteria properly. When I said 90 percent, the way you go through a penetrability analysis is you look at the probability of completing the mission and getting out.

When you take a look at the ATB, the answer is up until they do something we don't know anything about right now, it's 100 percent. They carry out the mission and get out.

If you take a look at the B-1 with its capability and you go fly the same mission, between 90 and 100 percent of the time they get out. Now again it goes back to Senator Quayle's point. I can generate a defense that they could impart that neither of them could penetrate, but that is probably not a high probability defense. It is one that is theoretical or hypothetical more than theoretical. It is hypothetical.

Senator **Exon**. Well, Mr. Chairman——

Senator **Warner**. Go ahead.

Senator **Exon**. So that a layman like me understands this, if we had the advanced technology bomber and if we had the B-1B in 1990, from what we know now of the Soviet potential there wouldn't be too much difference in their effectiveness as a penetrator. But by 1995, you anticipate that the Stealth would be much better as a penetrator. Is that correct?

Dr. **DeLauer**. That's the general overall statement which I think characterizes the nature of the program. I think there is no argument about that.

Senator **Quayle**. Let me ask one other question. Will you use the B-1B as a cruise missile carrier?

Dr. DeLauer. Yes, but it will be limited because of the volume considerations.

Senator Quayle. How much limited compared to the B–1?

Dr. DeLauer. We can't talk about that in open session.

Senator Quayle. What other cruise missile carriers will you be using between now and the turn of the century?

General Burke. The B–52's, of course.

Senator Quayle. Until the year 2000?

General Burke. No, no, but between now and then we will be using them.

Senator Quayle. What will be the primary cruise missile carrier?

General Burke. For the next several years necessarily the B–52's.

Senator Quayle. I am looking in the 1990's.

Dr. DeLauer. In the 1990's a combination, probably.

Senator Quayle. Of what?

Dr. DeLauer. Go ahead, General Burke.

General Burke. We expect to have all of the B–52's retired during the 1990s, at which time the B–1 will——

Dr. DeLauer. Become a cruise missile carrier.

Senator Quayle. The B–1B will be the primary one, but Stealth will be used on a more limited basis?

General Burke. [Nods affirmatively.]

Senator Quayle. Where does the Big Bird fit in here?

Dr. DeLauer. That's supposed to carry the MX missile.

Senator Quayle. Will it carry a missile?

Dr. DeLauer. I wouldn't call the MX a cruise missile.

Senator Quayle. I also wouldn't call the MX a cruise missile, but the plane, as far as carrying a missile.

Dr. DeLauer. We haven't gotten that far in our thinking, Senator Quayle, as to having a dual purpose.

Senator Quayle. So you are saying the B–1B, ATB and B–52 are the only cruise missile carriers you will have, meaning no other aircraft?

Dr. DeLauer. That is the strategic option. There may be some tactical cruise missiles that might have other aircraft platforms.

Senator Quayle. Which would be what?

Dr. DeLauer. Navy aircraft can carry cruise missiles.

Senator Quayle. But for strategic missions you are just talking——

Dr. DeLauer. That's right.

Senator Quayle. You don't have any plans? Wasn't there someone who had these things on 747's or something?

General Burke. That was looked at about 1977.

Senator Quayle. Yes, I remember a discussion on the original B–1.

General Burke. That was sort of a pervasive assumption that there ought to be a cheap way to buy an off-the-shelf transport to carry cruise missiles.

Senator Quayle. Has that been fully discarded?

General Burke. That was studied for about 3 years and the solid consensus is that by the time you put the modifications in you would need to make it a suitable carrier it winds up costing about as much as B–1's or whatever the other alternatives are.

Senator Warner. Mr. Exon, did you have one more question?

Senator Exon. One more question as a follow-up and we'd better go into closed session or we will go on all day.

General, I have had the feeling that the Air Force has looked at the Big Bird for some time in the MX deployment mode and generally thought it was not a very effective bird, if not a lame duck. Do you still share that opinion?

General **Burke**. That's not quite accurate, sir. We have looked at air mobile for a long, long time and to date have not found that effective.

The Big Bird is the notion of a very different kind of airplane. It has a much higher fraction of composites than anything before with very long endurance engines that could fly for days. So that offers the prospect of an air-mobile patrol, like a submarine patrol. You just put those planes up for 2 or 3 days and then you replace them.

It's fairly new. In fact, it really didn't surface until this spring was the first time I had ever heard of it and we don't know much about it. So that is new.

Senator **Exon**. That just surfaced this spring? I thought there was talk about that before and it was struck as cost prohibitive.

General **Burke**. In 1979, as part of President Carter's review of the MX question, we did a serious study of an air-mobile system, but it didn't have the features I just described of Big Bird. It was more like taking something like a C–5 or an upgraded——

Senator **Exon**. I see, not a new airplane.

General **Burke**. We looked at something like our C–X program and how that would work, but it didn't have the features I just described.

Senator **Exon**. Thank you, gentlemen. Thank you, Mr. Chairman.

Senator **Warner**. Thank you very much. We will now go into executive session. As soon as the clerk has advised me, we will resume.

[Whereupon, at 4:16 p.m., the hearing was recessed, to reconvene immediately in executive session.]

EXECUTIVE SESSION

The subcommittee met in executive session pursuant to recess, at 4:17 p.m., in room 224, Russell Senate Office Building, Senator John W. Warner, chairman, presiding.

Present: Senators Warner and Exon.

Staff present: Frank J. Gaffney, Edward B. Kenney, Ronald F. Lehman, E. George Riedel, professional staff members; Karen A. Love, staff assistant.

Also present: Buzz Hefti, assistant to Senator Warner; Jim Dykstra, assistant to Senator Cohen; Greg Pallas, assistant to Senator Exon; and Peter Lennon, assistant to Senator Levin.

Senator **Warner**. Dr. DeLauer, what do you wish to add by way of closed session?

Dr. **DeLauer**. In the open session we were talking about the relative merits of the two configurations. You know that we are cleaning up the inlets on the B–1 to reduce its radar cross section. We are [deleted] technology, [deleted] getting its radar cross section down to about [deleted].

When you look at the ECM capability, one of the things we have is a program called "have rust" which you people may be aware of. [Deleted.] But that is a program that has great potential.

There are other aspects of ECM [deleted] capability and those will have growth potential. Now, in the ATB itself, it is the [deleted] which creates the problem for the Soviets. On the other hand, the airplane is not invisible either visually or acoustically. You can see them and hear them.

One of the concerns we have is the possible countermeasures in that particular phenomenon arena. We have people looking at that right now. I covered that, I think, with you in the very closed session, but we have to take a good look at that. The Soviets could [deleted] but it will be a very expensive program. This whole package was put together with an idea that they would have to take some reactive efforts.

The D-5 is a real problem to them. The thing I couldn't talk much about in open session is that the deployment of the MX will force them into some form of protection for their land-based ICBM's. [Deleted.]

The hardness issue is one we are continuing to look at, but it does provide us a limited amount of capability. Whether it is cost effective or not, whether it's worth that million a silo, is still something we are looking at. We are not going to do anything stupid.

On the other hand, [deleted]. That is what I wanted to add in the closed session.

This completes the reasons why we are deploying the missile. I think it is very important to continue the MX development.

There is a third thing which normally I do not like to bring up because it tends to be a diversion. But if you look at the total package that we presented and if you look behind it in [deleted].

Senator WARNER. That's very interesting.

Senator Exon, do you have questions?

Senator EXON. Yes, gentlemen, what is the earliest IOC you are anticipating for the delivery of the first MX missile?

General MCCARTHY. The IOC is 1986. There will be missiles available to go through the assembly and checkout phase during 1986. We will have either 9 or 10 missiles on alert in late 1986.

Dr. DELAUER. The flight test program, though, starts in 1983.

Senator EXON. No; I am talking about deployment so they would mean something.

General BURKE. 1986.

Dr. DELAUER. 1986.

Senator EXON. If you go ahead with the hardening, would that dovetail? Is that what you are planning? You said something earlier about wanting some money in this budget to start doing some planning?

Dr. DELAUER. Just the A. & E. work, the architect-engineering, the site survey. As was pointed out previously, a lot of this hardening capability is site-peculiar. It turns out one of the reasons we took the Titans as an alternative was we have a lot of geology data available to us from the days we did the Titan work. That makes it a little cheaper than going out and boring all of the holes.

As you might remember, that is what has been going on in the MX. We had a bunch of crews out there drilling holes all over Nevada.

Senator EXON. That didn't help any.

Dr. DELAUER. We have to do that in order to do the detailed design of the hardened system.

Senator **Exon**. But the basic thrust of my question is, If you and we decide to harden, there wouldn't be any delay with the deployment.

Dr. **DeLauer**. No.

Senator **Exon**. I'm saying would it speed things up to get some MX's operational, to put them in one of the existing holes?

Dr. **DeLauer**. The biggest amount of money that has to be spent, as we point out, is in command/control, the power supply, and all of the infrastructure that goes with emplacement of a new system. You can't use the same thing as we do in Titan.

In Titan, as you might remember, they have unitary launch control systems. You wouldn't have that. You would have to tie them all together.

Senator **Exon**. And in the Minuteman field we have what, 1 launch control facility for about 10 holes?

General **Burke**. One for 10.

Dr. **DeLauer**. One for 10.

Senator **Exon**. Is that for both Minuteman II and III?

Dr. **DeLauer**. That is for both systems.

General **Burke**. Minuteman II and III have the same.

Senator **Exon**. Each one controls 10?

Dr. **DeLauer**. Flights of 10 and wings of 50, as I understand—squadrons of 50.

Senator **Exon**. I have never been able to understand why, because I have assumed the Minuteman III was a more effective weapon than the Minuteman II or else we wouldn't have built it. We are talking about the possibility of putting the MX in Minuteman III silos rather than Minuteman II silos?

General **Burke**. If we did it would be because of the more favorable geology and other pertinent factors. We would surely take those displaced Minuteman III's and put them in Minuteman II silos.

Dr. **DeLauer**. II's.

General **Burke**. In II's, and retire II's.

Dr. **DeLauer**. When we did the upgrading of the Minuteman III's I remember we made changes in those silos that brought them up to a higher degree of hardness than we have the II's. Isn't that right? I think we did some EMP hardening and we had different power supplies and things like that. When we put the III's in it's more compatible.

General **Burke**. We have some Minuteman II shelters which have been hardened and upgraded and some that have not. But the big problem is the Minuteman II fields are located in soils that don't provide a high degree of innate hardness.

Senator **Exon**. And why are we not going with the MX's in Titan holes only? I know it's our biggest. Are you talking about throw-weight?

General **Burke**. No, sir, it's not a throw-weight question. The question being debated at the Pentagon is what are the relative merits of going with the Titan or with the Minuteman? We have outlined what we think are the pros and cons of each.

Senator **Exon**. What do you think?

General **Burke**. I would think that Minuteman will probably prove to be the most cost-effective solution. It does run into some SALT considerations as we talked about earlier and that needs to be thought through carefully.

Senator **Exon**. Do you mean it would be cheaper to put them in Minuteman holes than in Titan holes?

General **Burke**. Yes, sir.

Dr. **DeLauer**. A little bit.

Senator **Exon**. Even if you had to harden them?

General **Burke**. Yes; even if you have to harden them. The Minuteman will be cheaper because it has a much better infrastructure. The first thing is, if you are going to go beyond 18 Titans you will have to go to widely separated locations—Arizona, Arkansas, Kansas.

Dr. **DeLauer**. Yes; two different States.

General **Burke**. When, as you know, at each Minuteman wing up to 600 Minuteman silos are located in reasonable proximity to each other.

Senator **Exon**. If you go to Minuteman III's, do you pull out the Minuteman III's and put them in Titan holes?

General **Burke**. We would put them in existing Minuteman II holes and retire Minuteman II's.

Senator **Exon**. I see. OK.

General **Burke**. That is relatively inexpensive, although it's quite expensive compared to the things we are talking about.

Senator **Exon**. So whether or not we hardened, whatever silos we used for the MX wouldn't delay the program?

General **Burke**. No, sir.

Senator **Exon**. We would just save some money?

Dr. **DeLauer**. You would save $10 to $15 million a hole.

Senator **Exon**. Let me check into this question which I asked in open session and I suspected you couldn't answer.

What about the dramatic increase in accuracy that we are discovering now in our Trident I and Trident II missiles, which I think will be operational in 1989? I guess that is an open figure. How does the Trident II compare, accuracywise, with the MX?

Dr. **DeLauer**. [Deleted.]

They will both be very, very accurate, sir.

Senator **Exon**. Is it possible in the out years you might decide to rely almost exclusively on Trident II's and start phasing out the three parts of the Triad?

Dr. **DeLauer**. I would be just speculating on that. You know we have different sets of problems with them. One of the good things about the land-based missile system is that it is always ready. It has the highest level of readiness of any system we have. It is the most inexpensive from an O. & M. standpoint. Regarding the fleet ballistic missile force, half of the force is always down. You have half in and half out. So that is an expense.

Senator **Exon**. Don't we generally deploy about two-thirds of our submarines?

Dr. **DeLauer**. Some are in transit or refit, but you don't have the full force in use. Also there is the whole question of manning the submarines. That is a problem facing the Navy. Getting good officers is a problem facing the Navy because they spend so much time at sea and that problem is something we must face.

So I can't speculate. The problems are different. They are not really technical problems. There are some manpower problems that are different.

Senator **Exon**. I have no further questions.

Senator **Warner**. Thank you. We must terminate the hearing now. I know Dr. DeLauer has an appointment, as does General Burke and we will now submit questions for the record and working with counsel of the subcommittee, could you determine how much of the information sought by the submitted questions could be put in opened versus closed?

Again I wish to compliment the witnesses.

Dr. **DeLauer**. Thank you for having us. It was important that we get this on the record.

[Questions with answers supplied follow:]

Questions Submitted by Senator John W. Warner

SECOND WINDOW OF VULNERABILITY

Senator **Warner**. Dr. DeLauer, in Secretary Weinberger's last visit to the committee, he testified that superhardened silos might be available as early as 1985 and would be survivable at least until 1987 or 1988. Subsequent testimony indicates that the IOC of superhardened silos is 1986 if all goes well and that there is no guarantee that a mere 18, or 36, or 40 such superhardened silos will be survivable then. Worse, even if superhardened silos are survivable until 1987 or 1988, we have received testimony that "Big Bird" and "Deep Underground Basing" will not likely be available until the 1990s. That seems to imply that, even if superhardening works as you say, unless we deploy a ballistic missile defense system which testimony says cannot be available until perhaps 1988, we will have a "second window of vulnerability" even after your temporary superhardening of silos. Dr. DeLauer, isn't it likely that there will be a "second window of ICBM vulnerability" in the 1980s under your program?

Dr. **DeLauer**. We have not represented silo basing as completely closing the "window of vulnerability." It will provide an improvement in survivability and will provide a number of other benefits which we have discussed. We might or might not have some decrease in survivability for a brief period before one or more of the long-term MX options came into existence. One cannot pin down precisely just how and when Soviet capabilities or our capabilities will change that far in the future. It is entirely possible that we could have a meaningful deployment of either BMD or deep underground basing before the 1990's.

DECEPTIVE BASING

Senator **Warner**. Dr. DeLauer, in the past this committee has received testimony that a deceptive basing mode such as MPS could permit the deployment of a more effective ballistic missile defense earlier. Could you support some form of deceptive basing of the MX with BMD if this was the best way to deal with such a second window of vulnerability?

Dr. **DeLauer**. We will definitely consider deceptive basing of the MX missile in conjunction with ballistic missile defense as one of the long-term basing options. If that option should be available sooner than other options, that would be an important point in its favor but obviously would be only one of several major considerations.

SUBMARINE COMMUNICATIONS

Senator **Warner**. How do you provide prompt hard-target kill capability with submarine-launched D–5 ballistic missiles unless you can solve the C^3 problem?

Dr. **DeLauer**. With the communications capabilities we see being in operational use during the rest of this decade, SLBM's will usually not respond as quickly as land-based missiles. However, they will still be able to attack a large number of time urgent targets and of course will have an excellent capability against the much larger number of fixed hard targets.

Senator **Warner**. Is the problem of C^3 connectivity with our submarine force more or less, difficult than C^3 connectivity with mobile ICBM's?

Dr. **DeLauer**. The laws of physics make communications with submerged submarines inherently more difficult than communications with land-based missiles. There is no question about that. However, our connectivity is good enough for most purposes most of the time, and is expected to improve in the future.

B-1'S PRIORITY VIS-A-VIS MX

Senator WARNER. How does the B-1's importance in terms of the contribution to the revitalization of our strategic deterrent change as a function of what is done on MX basing? If MX is survivably-based what priority does B-1 enjoy? If MX is not survivably-based, what happens to B-1's priority?

Dr. DELAUER. That is not a simple question to answer because you are asking about programs which come to full fruition over different time scales. Overall, our biggest strategic problem is vulnerability of the ICBM force because, if that vulnerability is not corrected, one complete leg of the Strategic Triad will be vitiated. However, as you are aware, we have regretfully concluded that it is not possible to have IOC of a new system which will fully take care of the ICBM vulnerability problem until late in this decade or possibly in the early 1990's. The B-1, on the other hand, will be available much sooner and can take an important role in more limited conflicts. On balance, the B-1B's priority is relatively higher as long as the survivability of the ICBM force is in doubt. As time passes and the ICBM force is based in a more survivable mode and the ATB becomes operational, the relative priority will decline somewhat. It should be emphasized that the President's strategic modernization program consists of a number of coherent parts all of which are important and mutually supporting.

B-1/ATB

Senator WARNER. Is the B-1 going to drain off funds for the ATB?

ANSWER. The ATB schedule is paced primarily by the technology and urgency of the need. Near-term ATB funding has been set at a level consistent with prudent aircraft development. Outyear funding could vary as a result of both B-1B and ATB performance.

Senator WARNER. What is the ATB's IOC? 1989 or early 1990s?

ANSWER. Considering technology risks, a prudent IOC for the ATB would be the early 1990s.

Senator WARNER. Could a sound, relatively low risk ATB program be possible with an earlier IOC if more funds were available?

ANSWER. At this point in time an early 1990s IOC for the ATB appears prudent. The schedule is paced largely by the need to mature the design, and develop the technology. As we proceed with the B-1B and the ATB, it may be prudent to reconsider the early 1990s IOC for either a faster or slower pace.

Senator WARNER. Is the earliest practicable IOC for ATB consistent with sound program management being preserved under President Reagan's two bomber program?

ANSWER. Yes. The decision points for the ATB and additional procurements of the B-1B have been phased. This integrated two bomber program will allow us to exploit competition to motivate performance and control costs.

Senator WARNER. Is technical risk the only consideration in the decision to slip the ATB IOC?

ANSWER. The Department has concluded that an early 1990s IOC allows ATB to be developed at the fastest prudent pace. This schedule reflects the risks associated with this new technology and the fact we are proceeding with a combined B-1B/ATB program. With unconstrained funding we could possibly achieve a late 1980s IOC; however, the faster pace would increase the risks of "throwing money at the problem." The Department feels that the urgency for a high risk, high cost ATB effort is just not there given the confidence we have in the B-1B program.

PRELAUNCH SURVIVABILITY OF B-1

Senator WARNER. General Burke: How important is the improved pre-launch survivability capability of the B-1?

ANSWER. While elements of U.S. strategic policy have been altered over the years, our fundamental objective of deterring nuclear war has remained unchanged. Our forces, if they are to be credible in their deterrence role, must have a high degree of pre-launch survivability in order to deny the Soviets any prospect of victory through a preemptive attack which, if successful, would remove our ability to hold at prohibitive retaliatory risk those things the Soviet value most.

The B-1B will be the mainstay of the air-breathing segment of the Triad from the mid 1980s through most of the 1990s. The pre-launch survivability characteristics of the B-1B aircraft which include: quick start, short takeoff roll, rapid flyout, and nuclear hardening—all contribute to the military capability and deterrent value of this system as perceived by the Soviets.

PRELAUNCH SURVIVABILITY OF B-1 VERSUS B-52'S

Senator **WARNER**. General Burke: How does it compare with that of the B-52's?

ANSWER. The B-1B has a greater margin of safety in pre-launch survivability than the B-52. Its greater survivability stems from improved capability in such areas as nuclear hardening, engine start, takeoff and flyout performance. Compared to the B-52, the B-1B will be twice as hard to nuclear effects, have faster safe escape time and will be able to disperse to a much larger number of runways. Thus, the B-1B design addresses the key variables affecting pre-launch survivability, making it several times more difficult to destroy in base escape than the B-52.

OBTAINING HIGH CONFIDENCE PRELAUNCH SURVIVABILITY

Senator **WARNER**. General Burke: How do you obtain high confidence prelaunch survivability with our dispersed basing?

ANSWER. Prelaunch survivability is a function of more than just dispersed basing schemes, although air base dispersal is one option the Air Force does consider.

Other options include: (1) stationing critical assets in the interior of the country to increase the usable warning time from a submarine launch missile attack, (2) improving the preemptive attack survival characteristics of the weapon system, (3) camouflage or deception, (4) increased alert postures (even airborne alert), and (5) diversifying our offensive forces so that a simultaneous attack will not succeed.

Dispersed basing will enhance our pre-launch survivability by increasing the number of weapons required to be employed, plus raising an element of risk to the enemy. However, dispersal alone does not provide high confidence in survivability. Because of this we are evaluating our basing and related launch options to realize the highest pre-launch survivability factors consistent with the potential threat.

By utilizing bomber dispersal basing (bases not normally used for bomber operations) during times of crisis and increased international tension, we are able to dramatically compound a Soviet attack planner's targeting problem regarding our stategic bomber force. The attack planner is faced with the dual problem of having to target more bases, as well as contend with the total force having a quicker escape time due to the reduced number of bombers on any particular base.

This dispersal provides a higher confidence in bomber pre-launch survivability, raises the cost of attack in numbers of weapons, and creates a major element of doubt in an enemy's confidence against that force.

PLANS TO BASE B-1

Senator **WARNER**. General Burke: Are you planning to base B-1's at dispersed fields?

ANSWER. Yes, we are. As you are aware, we already have an extensive dispersal plan which we are constantly reviewing. Since the B-1B has superior landing/takeoff characteristics it allows us the flexibility to use a greater number of airfields in our plan. This will result in a significant increase in pre-launch survivability.

FUNDING FOR DISPERSED BASING

Senator **WARNER**. General Burke: How much dispersed basing is funded in the POM?

ANSWER. Since the POM is an internal working paper subject to change, the information requested does not necessarily reflect the final Air Force budget request. The final funding level requests will be determined after all Air Force priorities have been properly reviewed.

SUPERHARDENING BUY IN TERMS OF IMPROVED SURVIVABILITY

Senator **WARNER**. What does superhardening buy in terms of improved survivability? Is it the Department's position that this is anything but an interim measure designed to make marginally more survivable our MX force against current and near-term projections of Soviet ICBM capabilities.

ANSWER. [Deleted.]

Superhardening is viewed as an interim measure designed to enhance U.S. strategic capability at the earliest possible time while we aggressively pursue a survivable MX basing mode for the long term.

WORTH OF SUPERHARDENED SILOS

Senator **WARNER**. How much do we think the increased uncertainty a few superhardened silos may cause the Soviet targeteers is worth?

ANSWER. It is difficult to quantify such uncertainty. However, because of the inherent problems in attacking MX in superhardened silos, the Soviets must contend with certain problems. [Deleted.]

Overall, credible, superhard silos will not only generate increased Soviet uncertainty and add to the drawdown price, it will also produce a positive measure of increased deterrence—all of which enhance our security posture.

MULTIPLE PROTECTIVE SHELTER BASING SCHEME

Senator **WARNER**. Why was the Multiple Protective Shelter basing scheme abandoned?

ANSWER. The Reagan administration recognized the Soviet capability to deploy a very large number of accurate warheads in their future force and believed that it would be imprudent for the United States to base a weapon system on the anticipation of an effective arms limitation with the Soviets.

Additionally, the administration felt any basing system which depended upon some numerical equivalence between the number of undefended U.S. shelters and the number of Soviet warheads was an inappropriate basis for our reliance.

IMPORTANCE OF MX IN TERMS OF REAGAN'S PROPOSAL

Senator **WARNER**. How important is MX in its present basing configuration relative to other strategic programs: in terms of the priority attached by the witnesses to an MX deployed as Reagan proposes vis-a-vis other strategic forces initiatives such as B-1 and ATB?

ANSWER. The Reagan five point strategic modernization program cannot be considered in separate parts. It is a comprehensive, integrated, and far-reaching effort to provide and maintain diversified strategic capability into the twenty-first century. The strategic modernization program is designed to directly improve all the traditional Triad force elements, enhance defensive capabilities, as well as increase the survivability and effectiveness of the C^3I which supports offensive and defensive forces. The program is a total strategic systems effort and priorities do not exist within its subelements.

IMPORTANCE OF MX IN TERMS OF VALUE ADDED TO STRATEGIC FORCES

Senator **WARNER**. How important is MX in its present basing configuration relative to other strategic programs: In terms of the value added to our strategic forces by an MX with questionable survivability versus that added by an MX credited with high survivability (i.e. MX/MPS)?

ANSWER. The overall goal of the President's strategic modernization program is to maintain an effective mix of complementary capabilities and overlapping system characteristics to assure all the capabilities needed for deterrence and to prudently hedge against the failure of individual force elements. This requires a multiplicity of forces.

The long-term objective of the MX program is to restore a composite of traditional ICBM force characteristics in the Triad. The characteristics include high alert rate, flexible and effective employment across a range of targets, survivability and endurance.

The President's program holds for eventual restoration of the full complement of ICBM characteristics in the long-term. In the near-term, however, there are critical requirements that can only be achieved by deploying the MX missile.

With the decision not to pursue the multiple protective shelter system, silo basing is the only approach available that will permit deployment before the 1990s. Silo-based MX alone will not give the level of assured deterence that is ultimately needed for a long-term strategic force posture; but, silo deployment of MX is a vital first step in the ICBM modernization program.

LONG-TERM OPTIONS PROVIDING SURVIVABILITY FOR MX

Senator **WARNER**. What is presently known about the long-term options under consideration as means to provide survivability for MX?

ANSWER. All three of the proposed long-term MX basing options (Continuous Patrol Aircraft, Deep Basing, and Ballistic Missile Defense) are thought to have potential for survivability. There are many issues with each of these options that are yet to be resolved. This is primarily why each option will undergo extensive concept developement leading to the 1984 decision.

CURRENT ESTIMATES OF BMD/BIG BIRD/DEEP UNDERGROUND OPTIONS

Senator **WARNER**. What are the current estimates of the technical, military and budgetary feasibility of the BMD/Big Bird/Deep Underground options?

ANSWER. Although variants of all of these options have been evaluated to some extent in the past, little in the way of detailed information is available at present. It is judged that each of these options is technically feasible and has promise for providing a survivable, militarily effective system in the long term. However, no good estimate of acquisition cost can be given.

Questions such as these will be addressed in the early stage of the research and development effort.

DECEPTIVE BASING FORECLOSED AS OPTION FOR MX

Senator **WARNER**. Is deceptive basing foreclosed as an option for providing long-term survivability?

ANSWER. No. Deceptive basing of offensive missiles in conjunction with defense components (Defended Deceptive Basing) will be evaluated as part of the BMD option over the next 2 years.

DECEPTIVE BASING ENHANCEMENTS

Senator **WARNER**. Would deceptive basing enhance the BMD option?

ANSWER. Deceptive basing of both offensive missiles and defensive components has promise in enhancing the effectiveness of the total system. Each contributes considerable leverage and, together may provide for long term ICBM survivability. This alternative will be evaluated as part of the BMD option over the next 2 years.

REAGAN PROGRAM AND STRATEGIC DOCTRINE PERTAINING TO LAUNCH UNDER ATTACK

Senator **WARNER**. Does the Reagan program represent a fundamental change in doctrine in favor of launch under attack?

ANSWER. U.S. nuclear doctrine has never advocated launch under attack, nor is it shifting in that direction. Yet the capabilities of ICBMs to react quickly and to launch under attack are important characteristics which contribute to deterrence. This is especially true in the present environment where hardened ICBM silos have become more vulnerable to Soviet attack.

The Reagan administration strategic modernization program is a balanced effort to increase survivability and reduce the need for rapid response decisions. Most noteworthy are improvements planned for C^{3}I. The proposed programs to enhance survivability of early warning systems, command and control centers, and communications links will also enhance the survivability and effectiveness of our strategic forces. C^{3}I improvements coupled with bomber, ICBM, SLBM, and strategic defense modernization programs will allow more time for analyses and decisions and reduce the perceived need to launch under attack.

EMPHASIS ON SURVIVABILITY

Senator **WARNER**. Does the Reagan program represent a fundamental change in doctrine in favor of emphasis on survivability rather than retaining a prompt hard-target kill capability?

ANSWER. The Reagan strategic modernization program is one of balanced improvements in survivability and capability across the spectrum of U.S. strategic forces. It is designed to insure that the U.S. will maintain appropriate retaliatory capability under all possible scenarios of nuclear conflict. Appropriate retaliation requires a mix of capabilities at all times. For example, limited, prompt, hard-target-kill capability and the capability to strike a spectrum of targets over a protracted period will continue to be required and maintained as U.S. strategic force capabilities.

TRIAD

Senator Warner. Does the Reagan program represent a fundamental change in doctrine in favor of giving up on the Triad—going to sea?

Answer. President Reagan's strategic modernization program not only supports the Triad, but is the most comprehensive, integral plan in support of our doctrine of deterrence since the Eisenhower administration. When examining the five main elements of this program, we can see that two of them—C^3 and strategic defense—support the Triad as a whole, while the remaining three—ICBMs, SLBMs, and Bombers—support each leg of the Triad. For example, the United States will continue development of MX and produce at least 100 missiles, some of which will be deployed in modified Titan or Minuteman silos until a final MX basing scheme is selected. Continuous Air Patrol, Ballistic Missile Defense, and Deep Basing are three options. The United States will also develop a larger, more accurate sea-launched ballistic missile, the D–5, for deployment on Trident submarines beginning in 1989. Finally, the United States will take several steps to improve its bomber forces: develop a variant of the B–1 bomber and procure 100 aircraft, continue a vigorous R. & D. program for an Advanced Technology Bomber, and deploy over 3,000 cruise missiles on B–52Gs, B–52Hs, and B–1s.

IMPROVEMENTS IN STRATEGIC C^3

Senator Warner. Will the improvements in Strategic C^3 give us the option of launching under attack?

Answer. [Deleted.] It is a military tactic which adds to deterrent strength in that the Soviets cannot discount the possibility that the U.S. may launch under attack. Although not the objective of C^3 modernization, these improvements will enhance this capability.

REAGAN'S PROGRAM AND STRATEGIC DOCTRINE

Senator Warner. Are they designed with that objective in mind?

Answer. [Deleted.]

FEASIBILITY AND UTILITY OF A ROAD-MOBILE ICBM SYSTEM

Senator Warner. General Burke: Could we get your comments on the feasibility and utility of a road-mobile ICBM system. What are the pro's and con's for the United States of moving toward such a system—in lieu of or in addition to MX?

Answer. The road mobile concept has been considered many times in the past and rejected due to a variety of factors. Although the potential for location uncertainty and long endurance are positive features, such a system would have low confidence in survivability due to dependence upon warning, pose serious public interface and security problems and possess a questionable capability for rapid reaction.

B–1B CONCEPT OF OPERATION

Senator Warner. General Burke: What is the concept of operation for the B–1B?

Answer. The B–1B will initially serve as a strategic penetrating bomber with the capability to perform shoot-and-penetrate missions as required. As Soviet air defenses increase their effectiveness in the mid-late 1990s and as an effective advanced technology bomber becomes operational, the B–1B will be able to perform the standoff cruise missile carrier role.

Throughout its operational life, the B–1B will also be able to effectively perform a variety of other missions including worldwide force projection, counterintervention, theater nuclear and non-nuclear, as well as maritime support.

B–1 STANDOFF MISSIONS

Senator Warner. General Burke: Will it be a cruise missile carrying truck, making several stand-off missions against the Soviet Union before it begins to penetrate?

Answer. Currently, we plan for a major portiono f the B–52G/H force to assume the cruise missile carrier sole. This will be their primary mission starting in the second half of the 1980s, at which time we estimate advances in Soviet air defenses will dramatically reduce the B–52's ability to effectively function as a penetrating bomber.

During this same period, the B–1B with its significantly reduced radar cross section, higher penetration speed, and advanced electronic countermeasures will become the primary penetrating bomber, with cruise missile launch capability for use in a shoot-and-penetrate role as an employment option at the discretion of the using command.

The plan outlined above will continue to efficiently use the aging B-52 fleet while deploying a modern multi-role bomber (B-1B) which will have the capability to penetrate Soviet air defenses well into the 1990s in a multitude of employment modes. In addition, the B-1B will effectively complement the ATB, when it is deployed in the 1990s, and will be able to serve as a cruise missile carrier and conventional bomber throughout its projected 30-year operational life.

B-1 PENETRATING ONLY MISSIONS

Senator WARNER. General Burke: Will all B-1's perform penetrating only missions—whether or not they are equipped for cruise missile carriage—until such time as our confidence in the B-1's ability to penetrate begins to degrade or will some begin operating immediately in shoot and penetrate missions?

ANSWER. In accordance with congressional direction to develop a multi-role strategic bomber, the B-1B will be designed with cruise missile carriage/launch capability as part of the baseline configuration. The Air Force plans to incorporate external carriage of up to 14 ALCMs at the earliest opportunity in the production sequence (not later than aircraft number 19) and to retrofit the earlier production aircraft prior to production line shutdown.

Currently, we plan for a major portion of the B-52 G/H force to assume the cruise missile carrier role as their primary mission in the second half of the 1980s at which time we estimate advances in Soviet air defenses will dramatically reduce the B-52's ability to effectively function as a penetrating bomber.

During this same period, the B-1B with its significantly reduced radar cross section, higher penetration speed, and advanced electronic countermeasures will become the primary penetrating bomber, with cruise missile launch capability for use in a shoot-and-penetrate role as an employment option at the discretion of the using command.

The plan outlined above will continue to efficiently use the aging B-52 fleet while deploying a modern multi-role bomber (B-1B) which will have the capability to penetrate Soviet air defenses well into the 1990s in a multitude of employment modes. In addittion, the B-1B will effectively complement the ATB, when it is deployed in the 1990s, and provide a substantial conventional capability throughout its 30-year operational life.

FLEXIBILITY OF B-1

Senator WARNER. General Burke: How important do you believe flexibility to be in insuring successful attacks against the Soviet Union?

ANSWER. The B-1B multi-role bomber provides a vital dimension of flexibility to our Triad of strategic forces. A modern, effective manned bomber such as the B-1B, which can be employed in a variety of modes to attack Soviet targets, can provide an essential hedge against unexpected failure or less than planned performance of the other legs of the Triad. Such flexibility is the essential element in placing at risk the key enduring elements of the Soviet political and military power structure.

While our sea-based and land-based ballistic missile forces and air-launched cruise missiles can effectively attack targets whose location is fixed and precisely known prior to launch, only the strategic penetrating bomber has the capability to seek out and destroy targets of imprecise or unknown location.

Thus, it is essential that any new manned bomber must have the key characteristics of long range and large payload which allow this flexible application of force. These same characteristics are also useful in projecting power across the spectrum of potential nuclear and nonnuclear warfare.

"60 MINUTE'S" STORY ON TITAN II'S

Senator WARNER. General Burke: Would you comment for the record on the 60 Minute's story which appeared this weekend regarding the need to replace the Titans II's and the relative safety of the MX should we decide to replace Titan II's with modern MX missiles?

ANSWER. The recent story on the CBS News program "60 Minutes" centered on operational problems with the Titan II missile system, especially in regards to the fuel system and safety procedures.

The Secretary of Defense, Caspar Weinberger, appeared before the House Budget Committee on September 23, 1981, where he stated that the Titan II missiles would be deactivated. He has also discussed the subject a number of times before other congressional committees and in public forums.

The decision as to where we will silo base the MX missile has not yet been made. The MX missile will be safer than our existing Titan missiles due to two primary reasons:

a. The MX missile represents more than 20 years of experience in ICBM technology, encompassing a better understanding of safety procedures and materiels handling.

b. The MX is primarily a solid-fuel missile, while the Titan II is a liquid-fuel missile. Liquid fuel is more volatile than solid fuel, and requires special handling.

SPECIFICS OF SUPERHARDENED SHELTER CONCEPT

Senator **Warner**. What are the specifics of the superhardened shelter concept?

Answer. Minuteman sites would require construction of a new silo in the same location since the present 12 foot diameter launch tube would not allow sufficient launcher rattlespace for nuclear weapons shock environments. The present Titan II silos would accommodate the new launcher/shock isolation system (SIS) common to the reconstructed Minuteman silos with adequate rattlespace.

However, major modifications to the Titan II silo are required. These include "gutting" the entire facility, e.g., removal of launch tube, interior walls and equipment rooms; new headworks and closure system; and the addition of reinforced concrete walls and floor inside the present facility.

The launcher, launcher equipment and shock isolation system would be common to Minuteman and Titan II installations. Hardness levels would be the same (within the constraints of different geologies) and operational capabilities identical. Major improvements include UHF transceiver with a pop-up antenna for post-attack communications, equipment for remote retargeting and more reliable security sensors.

The main difference between Minuteman and Titan II modifications is in the support equipment required outside the silo. The power and communications lines into the superhard silos must be hardened from electromagnetic pulse effects. Electrically isolated, nonconductive links will be provided. The nonconductive communications line will be fiber optic cable.

Design options for power isolation include: fuel cells, resistive wire and on-site generation. Whereas many of these systems require modification with Minuteman, all new equipment is required for Titan II. Detailed analyses/trade studies will be performed to determine the optimum approach.

LOCATION OF SUPERHARDENED SHELTERS

Senator **Warner**. Where will they be located?

Answer. Our current plan calls for superhardened silos to be located at one or more of nine possible Titan and Minuteman Air Force Bases. The exact location has not yet been determined.

COST OF SUPERHARDENED SHELTERS

Senator **Warner**. How much will they cost?

Answer. From the preliminary assessment performed by the Air Force, the projected cost for superhard Minuteman silos is as follows:

	Millions
Fiscal year 1982:	
Procurement for hardened equipment	$26.8
Construction of hardened facility	15.8
Total/silo	42.6

DESIGN/AVAILABILITY OF SUPERHARDENED SHELTERS

Senator **Warner**. How far along are we on a design—when will one be available?

Answer. Although we have established the concept definition, we have not yet started the detailed engineering design of superhardened silos. Engineering design will begin after a decision is made as to the specific hardness to be attained and whether Minuteman or Titan silos will be reconstructed.

IMPLICATIONS FOR SALT OF SUPERHARDENING MM OR TITAN II SILOS

Senator WARNER. What are the implications for SALT of super-hardening Minuteman or Titan II silos?

ANSWER. Under SALT, modernization and replacement of existing missiles and launchers is permitted. However, during modernization, the dimension of the silo launcher may not be increased by more than 10–15 percent under the Interim Agreement. This limitation is carried over into SALT II as a 32 percent increase of the silo's internal volume.

Although MX in a superhard Titan silo is compatible with this constraint, deploying MX in a superhard Minuteman silo significantly increases (possibly by a factor of 4) the volume of the modernized silo beyond the SALT constraints.

CONSIDERATION OF MINI-MOD OF MINUTEMAN SILOS

Senator WARNER. Is a so-called mini-mod of the Minuteman silos, whereby MX's would be deployed in silos of essentially the same hardness, under consideration?

ANSWER. Although only maximum hardness silo deployment of MX has been evaluated to any great extent over the past month, consideration is now being given to the so called mini-mod of Minuteman silos. This would result in a loss of hardness and a lower cost program. The Air Force will do additional design and evaluation work on this option in the coming months.

TOTAL SYSTEM HARDNESS OF MINI-MOD DEPLOYMENT

Senator WARNER. What would be the total system hardness of such a deployment?

ANSWER. A preliminary estimate of the hardness level of a "mini-mod" option is that there would be approximately 50 percent degradation of current system hardness.

PENETRATION OF B–1 OF SOVIET AIR DEFENSE

Senator WARNER. How long will the B–1 be able to penetrate Soviet air defense?

ANSWER. DOD analyses based on actual flight test results against advanced air defense systems indicate that the B–1B would have the capability to penetrate anticipated Soviet air defenses well into the 1990s in a multitude of employment modes.

B-1 PENETRATION TIME VERSUS ABILITY OF B–52G'S AND H'S

Senator WARNER. How does that differ from the ability of the B–52G's and H's

ANSWER. We estimate that in the second half of the 1980s advances in Soviet defenses will significantly reduce the B-52G and H models' effectiveness as penetrators, particularly against targets which the Soviets value highly.

B–1 PENETRATION TIME OF SOVIET AIR DEFENSE VERSUS ESTIMATES FOR ATB

Senator WARNER. How does that compare with estimates for the ATB?

ANSWER. We expect that an effective ATB, with its major advances in several technologies, will have the capability to penetrate anticipated Soviet air defenses in the late 1990s and well into the 21st century.

IMPORTANCE OF B–1 PENETRATION

Senator WARNER. How important is penetration? Can't cruise missiles launched from a safe stand-off distance do just as well?

ANSWER. We are developing the B–1B primarily for deterrence of nuclear attack, and experts who have studied that problem believe that what deters best is that which puts at risk those things the Soviets value most.

Our unmanned systems, cruise and ballistic missiles, are only effective against targets whose location is fixed and precisely known prior to launch. However, many targets of high value to the Soviets are imprecisely located in that they are movable and are better threatened with manned systems such as the B–1B.

Only a modern strategic penetrating bomber such as the B–1B has the capability to seek out and destroy high priority, hard, and imprecisely located targets throughout the duration of conflict, placing at risk the key enduring elements of the Soviet political and military power structure.

B-1 AS CRUISE MISSILE CARRIER

Senator WARNER. How good is the B-1 as a cruise missile carrier vis-a-vis the other two bombers (B-52 and ATB)? Does that include aft bomb bay carriage or not?

ANSWER. The B-1B will be a more efficient cruise missile carrier than either the B-52 and/or the ATB. While specifics regarding the ATB's range and payload are not releasable due to their classification, it can be said that cruise missile carriage was not a major design consideration for that aircraft. The B-52 and B-1B cruise missile carriage capabilities are compared in the table below. The B-1B as described does *not* include aft bomb bay carriage of cruise missiles.

ALCM MISSION—HIGH-HIGH PROFILE

B-52: Number of ALCM/Range refueled (unrefueled) [deleted].
B-1B: Number of ALCM/Range refueled (unrefueled) [deleted].

B-1B VERSUS B-1 (1977)

Senator WARNER. Is the B-1 being proposed by President Reagan for production substantially different from the B-1 killed by President Carter?

ANSWER. While the B-1B is approximately 70 percent common with the original B-1, the B-1B does incorporate several changes which will provide substantially improved performance and operational capabilities. The key differences between the B-1B and the original B-1 include increases in takeoff and inflight maximum gross/weight (giving longer range and greater payloads), advanced state-of-the art defensive and offensive electronics, a reduced radar signature and the addition of cruise missile carriage launch capability.

While all the changes listed above are significant, the combination of reduced radar cross section and advanced flight tested-effective defensive avionics are the most important. These characteristices permit the B-1B to employ fundamentally new electronic countermeasure techniques which will result in the B-1B possessing a dramatically improved penetration effectiveness as compared to the original B-1.

B-1B EXPENSE (REAGAN PROPOSED)

Senator WARNER. Will it be more expensive?

ANSWER. The costs between the B-1A and the current B-1B are quite comparable. When the 1976 cost estimate for the B-1A is adjusted for programmatic changes and changes in cost estimating methodology, the 1976 estimate and the 1981 B-1B estimate are essentially in agreement.

REAGAN PROPOSED B-1 FLIGHT CHARACTERISTICS

Senator WARNER. Will it have different flight characteristics (e.g., no supersonic capability)?

ANSWER. While the maximum inflight and takeoff gross weights have been increased, the flight characteristics of the B-1B will be essentially the same as the original B-1 aircraft.

For the B-1B, the low altitude penetration speed remains unchanged at .85 Mach with dash capability to .95 Mach. At high altitude, the B-1B will still have supersonic capability, but the maximum Mach will be reduced from 1.6 Mach to 1.2 Mach.

IMPROVED PENETRABILITY OF REAGAN PROPOSED B-1

Senator WARNER. Will it have significantly improved penetrability due to the integration of Stealth characteristics, reducing the radar cross section?

ANSWER. The radar cross section of the B-1B will be 1/10th that of the original B-1, and 1/100th that of the B-52. It is the combination of reduced signature, higher penetration speed, and advanced electronics, permitting the B-1B to employ fundamentally new ECM techniques which have not been applicable before, which significantly improve the B-1B's penetrativity. DOD analyses indicate that the B-1B will have the capability to penetrate anticipated Soviet air defenses well into the 1990s.

IOC FOR B-1

Senator WARNER. What is the IOC for the B-1?

ANSWER. The developmental pace and the resulting B-1B IOC are to a large degree dictated by front-end program funding. With prompt approval of the fiscal year 1982 development and production funding, we are confident that we can achieve the B-1B IOC in late 1986.

DELIVERY OF B-1 TO AIR FORCE

Senator WARNER. When will 15 aircraft be delivered to the Air Force?

ANSWER. The 1986 IOC for the B-1B is the scheduling milestone when a total of 15 B-1Bs will have been delivered to the Strategic Air Command.

B-1 MISSION CAPABILITY

Senator WARNER. When will 15 aircraft be mission capable?

ANSWER. In 1986, at B-1B IOC, a total of 15 B-1Bs will have been delivered to the Strategic Air Command. At that time, the squadron will be capable of standing SIOP alert duty.

COSTS OF PRESIDENT'S B-1 PROGRAM

Senator WARNER. What are the costs of the President's B-1 program projected to be?

ANSWER. The Air Force estimate of program costs for President Reagan's 100 B-1B aircraft program are as follows:

	Billions of fiscal year 1981 dollars
Research and development	2. 4
Procurement	17. 3
	19. 7
Cruise missile carriage/launch	. 8
Total	20. 5

HAVE COSTS FOR B-1B BEEN CHANGED

Senator WARNER. Have the costs been changed recently to make the program seem more affordable?

ANSWER. The baseline B-1B program cost estimate, as provided by the Air Force, has remained firm at $19.7 billion (fiscal year 1981 dollars) since May 1981. As part of President Reagan's strategic program, cruise missile carriage/launch capability was recently added to the baseline program bringing the acquisition cost to $20.5 billion (fiscal year 1981 dollars).

The Deputy Secretary of Defense has recently reviewed the program and has directed appropriate controls to insure that the program will not exceed the $20.5 billion budget in fiscal year 1981 constant dollars. At the Secretary's direction, particular attention will be paid to limiting cost growth in airframe, support equipment, initial spares and avionics. No change to the presently planned acquisition program or major changes in configuration will be made without the specific approval of the Deputy Secretary of Defense.

GAO REPORT ON B-1 COSTS

Senator WARNER. What about the GAO report which indicates that costs associated with the B-1 program have been improperly reduced, are being misrepresented or not fully identified?

ANSWER. In their draft statement, the GAO has made several assumptions and programmatic judgments with which the Air Force does not agree.

The Air Force has the utmost confidence that we can achieve a buy of 100 B-1Bs with an IOC in 1986 for $20.5 billion (fiscal year 1981 dollars), given the timely availability of program funding. Delays in appropriation of funds, or funding decreases will inevitably impact the overall program than year cost and schedule. Air Force disagreement with the GAO position follows:

Program cost reductions

The Air Force has reviewed each of these areas and considers the current Air Force estimate to accurately reflect the best estimate of program cost as related to each of these items. Since the B–1B is a derivative of the original B–1 with its associated technology investment, we are highly confident in our ability to initiate final development and production programs within the current cost and schedule projection.

The individual items in this portion of the GAO statement have been studied in depth by the DOD and it is the considered judgment of DOD that these reductions are achievable in the B–1B program. These figures have been generally verified by an Independent Cost Analysis (ICA) team and are consistent with the Defense Acquisition Reform Initiative.

Expenses in other program elements

The Air Force rejection of these added cost items are assessed to be consistent with Department of Defense policy, as well as management decisions made by the Air Force to achieve overall cost benefits through streamlined program management. In addition many items included in the category were rejected because they are more appropriately included in life cycle rather than acquisition costs estimates.

Many of these items are under program elements (PEs) different from the aircraft's PE because these items are not aircraft specific; that is, the items apply to, and benefit many different programs that are in development and production (e.g., Manufacturing Technology Enhancements). Additionally, every opportunity to combine test, training and evaluation efforts is being taken to obtain the best overall program at the lowest cost to the government.

Potential additions

The Air Force has made a firm commitment to the configuration of the B–1B aircraft. While there will no doubt be changes to the B–1B's configuration at some time during its 30 year operational life, there are no such changes anticipated in the near term. In addition, the Deputy Secretary of Defense has directed that no changes to the B–1B's configuration will be made without his specific prior approval. In addition, the Deputy Secretary of Defense has recently reviewed the program and has directed appropriate controls to insure that the program will not exceed the $20.5 billion budget in fiscal year 1981 constant dollars. At the Secretary's direction, particular attention will be paid to limiting growth in airframe, support equipment, initial spares and avionics.

No change to the presently planned acquisition program or major changes in configuration will be made without the specific approval of the Deputy Secretary of Defense.

In summary, the Air Force has reviewed the GAO assessment and remains convinced that the Air Force estimates best portray the B–1B acquisition program scope and content. The Air Force has no position with regard to the GAO's outyear rates of inflation.

CBO ANALYSIS OF B–1

Senator WARNER. Would you comment in detail on the CBO analysis?

ANSWER. The Congressional Budget Office (CBO) did not conduct an analysis. Rather, at the request of Senators Leahy and Proxmire, the CBO assessed the impact of their projected rates of inflation on an amended B–1B program.

The CBO amended the program by adding potential costs associated with rear bomb bay enlargement, permissive action link/command disable system, air-launched cruise missile capability, and several other items identified in a draft GAO statement regarding the overall scope of the B–1B program. The GAO items were grouped into three broad categories: program cost reductions, expenses in other program elements, and potential program additions.

The CBO's assessment of outyear inflation on their expanded B–1B program resulted in a then year investment cost estimate of $39.8 Billion. (This compares to the Air Force then year cost estimate of approximately $28.0 Billion.) It is not clear what is meant by the term "investment" cost since several of the items included in the $39.8 Billion cost are life cycle (total life time ownership) cost items and not normally considered acquisition cost estimates.

With regard to the CBO amendments to the baseline program, the Air Force has made the following assessments:

Rear bomb bay enlargement.—Not required—The base line aircraft can carry an adequate number of cruise missiles without this modification.

Air-launched cruise missile capability.—Already included in the current Air Force B–1B baseline program.

With regard to the GAO identified items included in the CBO assessment the following comments are appropriate:

Program cost reductions.—The Air Force has reviewed each of these areas and considers the current Air Force estimate to accurately reflect the best estimate of program cost as related to each of these items. Since the B–1B is a derivative of the original B–1 with its associated technology investment, we are highly confident in our ability to initiate final development and production programs within the current cost and schedule projection.

The individual items in this portion of the GAO statement have been studied in depth by the DOD and it is the considered judgment of DOD that these reductions are generally verified by an Independent Cost Analysis (ICA) team and are consistent with the Defense Acquisition Reform Initiative.

Expenses in other program elements.—The Air Force rejection of these added cost items are assessed to be consistent with Department of Defense policy, as well as management decisions made by the Air Force to achieve overall cost benefits through streamlined program management. In addition many items included in the category were rejected because they are more appropriately included in life cycle rather than acquistion costs estimates.

Many of these items are under program elements (PEs) different from the aircraft's PE because these items are not aircraft specific; that is, the items apply to, and benefit many different programs that are in development and production (e.g., Manufacturing Technology Enhancements). Additionally, every opportunity to combine test, training and evaluation efforts is being taken to obtain the best overall program at the lowest cost to the government.

Potential additions.—The Air Force has made a firm commitment to the configuration of the B–1B aircraft. While there will no doubt be changes to the B–1B's configuration at some time during its 30 year operational life, there are no such changes anticipated in the near term. In addition, the Deputy Secretary of Defense has directed that no changes to the B–1B's configuration will be made without his specific prior approval.

In addition, the Deputy Secretary of Defense has recently reviewed the program and has directed appropriate controls to ensure that the program will not exceed the $20.5 billion budget in fiscal year 1981 constant dollars. At the Secretary's direction, particular attention will be paid to limiting cost growth in airframe, support equipment, initial spares and avionics.

No change to the presently planned acquisition program or major changes in configuration will be made without the specified approval of the Deputy Secretary of Defense.

In summary, the Air Force has reviewed the CBO assessment and remains convinced that the Air Force estimates best portray the B–1B acquisition program scope and content. The Air Force has no position with regard to the CBO's outyear rates of inflation.

CONGRESSIONAL CONFIDENCE IN B–1

Senator **Warner**. Can the Congress have confidence that the B–1 program, as described by the President and Secretary of Defense, involving cruise missile carriage starting with the 19th aircraft, is not going to be subject to cost overruns? Will the design be sufficiently fixed and the contract tightly negotiated to insure that buying-in and subsequent overruns are not likely?

Answer. The Deputy Secretary of Defense has recently reviewed the program and has directed appropriate controls to insure that the program will not exceed the $20.5 billion budget in fiscal year 1981 constant dollars. At the Secretary's direction, particular attention will be paid to the development of a program management plan which will emphasize the achievement of cost and scheduled objectives for the B-1 program, including strict change control procedures, streamlined management, and prompt reporting of programmatic issues.

In addition, particular management attention will be paid to limiting cost growth in the airframe, support equipment, initial spares, and avionics. Quarterly reports describing the progress achieved in carrying out the B–1 program within its budgeted cost will be forwarded to the Deputy Secretary. No change to the presently planned B-1 acquisition program or major changes in configuration will be made without the specific approval of the Deputy Secretary of Defense.

During contract negotiations, the Under Secretary of Defense for Research and Engineering and the OSD General Counsel will continously review the contract negotiating process and provide bi-weekly reports to the Deputy Secretary of Defense.

QUESTIONS SUBMITTED BY SENATOR STROM THURMOND

B-1B AND ATB AVAILABILITY

Senator **THURMOND.** Dr. DeLauer, in your opinion, when could we expect an Initial Operating Capability for the B-1B and when could we expect it for the Advanced Technology Bomber (ATB)?

ANSWER. The IOC for the B-1B will be 1986, that is for a squadron of 15 aircraft with full certification and alert capability. The IOC for the ATB should be in the early 1990s.

UNIT PROGRAM COSTS OF B-1B AND ATB

Senator **THURMOND.** Is it possible at this time to compare the unit or program costs of the B-1B and the ATB?

ANSWER. Yes; however, it must be noted that the B-1B is a fairly well known quantity and can be priced within the ability to predict inflation. The ATB can at this point only be priced in general terms considering that research and development is still required.

Unit program costs for the B-1B are approximately $205 million per aircraft, including remaining R.D.T. & E., procurement, spares and support equipment. Unit program costs for the ATB are approximately $270 million per aircraft on the same basis with the considerable R.D.T. & E. costs prorated over the procurement. These costs are total program unit costs; flyaway costs would be considerably less.

B-1B VERSUS B-52 PENETRATION CAPABILITY

Senator **THURMOND.** What is the main difference in the ability of the B-1B to penetrate Soviet defenses as compared with the B-52?

ANSWER. The B-1B will have a radar cross section one one-hundredth that of the B-52. This combined with the higher low altitude speed (Mach 0.85 versus 0.55) and the better low altitude flight [deleted] in combination with the Electronic Countermeasures (ECM) will give the B-1B a much better penetration capability.

While the B-52's ability to penetrate advanced Soviet defenses in the mid-to-late 1980s will be in serious jeopardy, the B-1B should be able to penetrate advanced Soviet defenses well into the 1990s because of the above characteristics.

CIA TESTIMONY ON B-1B CHANGES

Senator **THURMOND.** Did the CIA testimony on this subject take into consideration the proposed design changes in the B-1?

ANSWER. When the CIA initially commented on general penetration ability of the B-52 and B-1, they were unaware of the design changes between a 197 B-1 and a B-1B. They were also unaware of the recent B-1 flight test results versus a modern air defense system. The DOD and CIA have recently submitted a joint statement on penetration capability to Senator Tower.

ATB DELAYS

Senator **THURMOND.** Dr. DeLauer, if we go forward with the B-1B program, is it likely the ATB would be delayed and, if so, for how long?

ANSWER. Given the funds that are planned in out year budgets, the ATB schedule will be paced by technical considerations and normal program risks as opposed to the existence of a B-1B program. An early 1990s IOC appears prudent for the ATB.

B-1B ESCAPE

Senator **THURMOND.** By what factor would the B-1Bs be able to survive a runway attack as compared with the slower B-52s?

ANSWER. Using the citeria of the number of Soviet warheads required to destroy escaping bombers, the B-1B would be [deleted] times better than the B-52. That is [deleted] times more Soviet warheads would be required to destroy escaping B-1Bs as opposed to escaping B-52s.

This is due to not only the faster base escape of a B-1B but also the design in nuclear hardness in the areas of blast, gust, thermal and EMP effects.

B-1B PENETRATION CAPABILITY

Senator **THURMOND.** Dr. DeLauer, on page 11 of your statement you declare that the B-1B can penetrate well into the 1990s in certain employment modes. How does this opinion track with Secretary Weinberger's testimony that the B-1B could not penetrate certain Soviet defenses after 1988?

ANSWER. On 10 November 1981, Secretary Weinberger and Mr. Casey, the Director of the CIA, sent a joint letter to the committees which discussed this subject in detail. This letter supports B-1B penetration well into the 1990s for the majority Soviet targets.

Air defense is often imagined as a wall or barrier that is or is not broken at any given point in time. This conception is misleading. Air defense in today's world is done in depth and consists of varying degrees of defense depending on the importance of the target and timing of the attack. Thus, there is no magic moment when given type of bomber cannot "penetrate." What occurs is that the probability of air defenses being effective over a range of desired targets gradually increases over time as defenses are improved. These improvements, however, can be offset through the introduction of new equipment and tactics in the attacking force. I am confident that the low radar cross section of the B-1B and its state-of-the-art electronics will allow it to penetrate to needed targets well into the 1990s. The improvements that the ATB will offer in these areas promises to allow similar effectiveness to be maintained well into the next century.

B-1B COSTS FOR ATB

Senator **THURMOND.** Dr. DeLauer, is any part of the $20.5 billion cost of the B-1B given in your statement a portion of the development cost of the ATB?

ANSWER. No.

AVAILABILITY OF SCIENTISTS AND ENGINEERS

Senator **THURMOND.** While I fully support the President in his Strategic Forces Modernization program, I am deeply concerned about the availability of scientists and engineers that will help carry out this program. Recent studies conducted in the private sector and within the administration indicate a growing gap between supply and demand of scientists and engineers. One administration study predicts a shortage in skilled labor of 2.5 million during the 1980s. Another private sector study predicts that our universities will graduate only one-third of the electrical engineers needed in the next 4 years. There are many other negative predictions.

Dr. DeLauer, first in your judgement is this shortage significant enough to impact the implementation schedule of the strategic program of the President and, if so, do you believe that it could stretch the window of vulnerability?

Dr. **DELAUER.** There is certainly a shortage of scientists and engineers in the in the country right now, but the Defense Department and its contractors have factored these labor problems into the schedules, and we are confident the schedules can be met. The MX missile development is a case in point. The full-scale engineering development was started over 2 years ago, and the program is almost precisely on schedule.

Senator **THURMOND.** Secondly, what is the administration doing about this very serious problem? How are we going to build all this hardware? How are we going to conduct our research and engineering development programs in a timely manner?

Dr. **DELAUER.** One of the most important things we can do is to maintain stability in the programs, talented people flow to jobs where the pay is right and where the living and working conditions are right, of course, but one of their biggest considerations is whether there is going to be reasonable stability for a few years. They also want to know that the country as a whole believes the work they are doing is important and this ties back into the stability question. When we have full congressional backing for the various points in the strategic modernization package, there will be a lot of good people who want to work on it. On the other hand, any item that should get canceled or deferred will be very hard to start up again.

COMMON MISSILE AND SUBMARINE BASING

Senator THURMOND. Dr. DeLauer, it appears that the administration is pursuing R. & D. in MX-basing in two areas: air basing and deep underground basing. First, will this R. & D. include the notion of a common missile and, second, it seems that submarine MX-basing is ruled out since the administration has no R. & D. effort in this area. Do you feel that the submarine-basing option should be ruled out or should it be left open?

Dr. DELAUER. We believe that the submarine option should be ruled out. It does not appear to offer significant advantages over the Trident system we are building now and would not maintain the viability of the strategic Triad. We are not including the common missile concept in our ICBM basing program. It would be inferior to the MX missile in many respects and would be years later in delivery.

Senator WARNER. Thank you very much. The hearing is adjourned.

[Whereupon, at 4:32 p.m., the subcommittee adjourned, to reconvene at the call of the Chair.]

STRATEGIC FORCE MODERNIZATION PROGRAMS

THURSDAY, NOVEMBER 12, 1981

U.S. SENATE,
SUBCOMMITTEE ON STRATEGIC AND
THEATER NUCLEAR FORCES,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

STRATEGIC FORCE DECISIONS

The subcommittee met in open session at 2:15 p.m., pursuant to notice, in room 212, Russell Senate Office Building, Senator John W. Warner (chairman) presiding.

Present: Senators Warner, Quayle, and Nunn.

Staff present: Frank J. Gaffney, professional staff member; Francis J. Sullivan, minority staff director; Paul C. Besozzi, minority counsel; Ronald F. Lehman and José E. Martinez, professional staff members; and Karen A. Love, staff assistant.

Also present: Paul Schreiber, assistant to Senator Denton; Robert Nichols, assistant to Senator Jackson; Frank Krebs, assistant to Senator Cannon; Arnold Punaro, assistant to Senator Nunn; Greg Pallas, assistant to Senator Exon; and Peter Lennon, assistant to Senator Levin.

OPENING STATEMENT BY SENATOR JOHN W. WARNER, CHAIRMAN

Senator WARNER. The subcommittee resumes its hearings on the strategic programs submitted by the administration.

We are particularly pleased to have today as our witness General Ellis. Few men in the history of this committee have attained the degree of credibility and respect that you have, General. We are delighted to see you back today.

In our conversation that we just held, I informed you of certain classifications that the subcommittee and indeed the chairman of the full committee, Senator Tower, are working on, one being the incorporation of the deceptive basing concept to be included by the administration in their study of the ballistic missile defense, BMD option, so that alternative will be considered along with the others.

Further, as to the advanced technology bomber, ATB, the funding of that will be dictated by meeting engineering and R. & D. milestones and not by fiscal constraints.

A number of Senators have expressed to the administration the desirability of getting on with that program at flank speed, as they say in the Navy, and fiscal considerations will not in any way dictate the speed, contrary to the ability to meet the R. & D. and engineering milestones.

Other than that, the committee has had quite a diversified expression of opinions by a number of witnesses. We intend to have more witnesses before we finish these hearings.

We are glad to have you today.

Senator Quayle, do you have any statement to make?

Senator **Quayle**. No.

Senator **Warner**. Senator Nunn?

Senator **Nunn**. Just briefly, I think both those announcements you made are positive; particularly the latter one, I think, is enormously important. The ATB has a potential of accomplishing significant breakthroughs. I think we have to be prepared to take some fiscal risk in order to accomplish that.

So, I congratulate you on those.

Before the witness starts today, I welcome him back. We have seen him many, many times. Most of us have visited him many times. I know of no member, active or retired, who has the kind of reputation for integrity and credibility that General Ellis has. He has always backed up his opinions with solid evidence. He is not the back-of-the-envelope type of planner. He has never taken a position on a matter that I know of that he didn't have reasoning and analytical support for that position. He, also, was one of those many years ago who had been warning us of some of the things that have come to pass today.

So, Mr. Chairman, I think we are very fortunate to have him here. I know he has probably come at some sacrifice of his time now, since he is on his own. He is a valuable man to hear, and I look forward to his testimony.

Senator **Warner**. He is also a constituent of mine, Senator.

Senator **Nunn**. That is good. Having a little leverage over him might be a healthy thing.

Senator **Warner**. We will go briefly in open session and then close the hearing. It has been the objective of the subcommittee to try to get as much testimony as possible in the open, to provide a strong record for use by Members of the Senate in any debate in connection with the strategic program, as well as to provide the public with a broader and better understanding of the importance of this program.

So, we welcome you today. I understand you have a brief opening statement, then we will turn to questions

STATEMENT OF GEN. RICHARD H. ELLIS, USAF (RETIRED), FORMER COMMANDER IN CHIEF, STRATEGIC AIR COMMAND, SAC

General **Ellis**. Thank you, Mr. Chairman. Thank you, Senator Nunn.

I thank you and Senator Nunn and the rest of the committee for their kind words. I don't think I would honor what I am about to say as a statement; it is merely informal remarks.

Senator Tower's letter inviting me here comments on some of the things that the administration has in their program.

In particular, I want to acknowledge the attention and the money and the effort that is being given to the communications, command,

and control. I recall very clearly the hearings you held on that. I think that your subcommittee must take a great deal of credit.

Senator Warner. You were the inspiration for that initiative by this subcommittee.

General Ellis. And the two-bomber program that Senator Tower mentioned, that, too, is one that was dear to my heart and still is. In closed session I will give you more detailed comments on it.

On the MX, I am delighted to hear also that there will be an option, as I understand it, with deceptors that the administration will be looking at. I hope mobility is included in that.

Senator Warner. Yes, the mobility will be a feature in deceptive basing. As the testimony developed, Senator Tower and others felt we ought to have clarification and that clarification now is forthcoming.

General Ellis. That will be very helpful. I would recommend that we try to move the 1984 date, at which time they come to a final decision on a basing, this way as much as possible. As you know, we have studied the MX system for some 15 years. We have looked at many, many options. I think that it will be difficult to come up with something that we have not looked at.

Senator Nunn. At that point, Mr. Chairman, I think the Air Force—I don't know whether it is on the official record or not—I have been told that they could commit all the options studied, that Secretary Weinberger has testified to, within a period of about 12 months, rather than 3 or 4 years.

Do you generally concur with that?

General Ellis. I do. There are shelves loaded with previous studies on these options that we have looked at, every one of the ones that the Secretary has expressed interest in.

Senator Nunn. What would you think if the committee mandated a study be completed within a period of 1 calendar year?

General Ellis. That would certainly be a target date I would strongly recommend.

What has happened now is that the IOC is slipping. While the last administration was making up their mind, we lost almost 3 years. Right now that is sort of a moving date, depending on how long they take a look at the various options and the degree of work that has to be done.

I will comment in more detail on that in closed session, Senator.

Beyond those comments, I would have nothing further to add in open session, Senator.

Senator Quayle [presiding]. Senator Nunn?

Senator Nunn. I have a number of questions. I would like to have some of them answered in open session, if you can. Let me give you a few of them, one by one. If you prefer to answer them in closed session, say so. I will defer to your judgment on that.

Mr. Chairman, I don't want to monopolize the time, but I will have several questions. I will be glad to yield at this point.

Senator Quayle. We will tell you when you have monopolized the time. Go ahead.

Senator Nunn. Secretary Weinberger has testified that President Reagan's strategic program is designed to restore strategic balance and to enhance survivability and deterrence. How do you view the

President's program in terms of strategic balance, survivability and deterrence?

General **Ellis**. I hate to start off this way, but this is one of the questions I was prepared to address only in closed session.

Senator **Nunn**. The other one you may want to answer in closed session. If you decide we will have vulnerability from 1981 to 1986—I don't know if that is the proper time but let us say for the next 5 or 6 years—do you think that the President's program as now envisioned will close that window of vulnerability any in the next 5 years in terms of actual capability?

General **Ellis**. I think that is fairly straightforward. In the next 5 years nothing is being added that has not already been in production. The B–1 will not be in for 5 years. The MX, of course, is slipping now. There are programs that have been slipped in R. & D. or phased out early in existing programs. So I think it is reasonably easy to figure that there will not be any improvement in the situation in 5 years.

Senator **Nunn**. In effect, when you phase out the B–52 faster than expected and take out the Titans, won't the window of vulnerability be widened or at least the 5-year window, will that not be deepened in the next 5 years?

General **Ellis**. The only improvement that we had previously, Senator, during that time period was very marginal anyway. It was the ALCM coming in, and the additional Trident submarines and the sea-based missile. That was a marginal increase, but we also retained the Titan and the B–52's. The B–52D's contribution to the overall plan is minimal compared with the other resources, but it is a contribution and one that will not be available during these 5 years.

Senator **Quayle**. I think the conclusion there is fairly obvious: You can't see an improvement under conditions like that.

Senator **Nunn**. If you, General Ellis, had your priorities, how would you rate these four, just in general terms—the B–52's, the B–1's, the ATB, and the cruise missiles—how would you rate those in terms of 1, 2, 3, 4 in priority? By the B–52's I mean continuing the B–52's, not phasing those out on an accelerated basis.

General **Ellis**. Are you talking in terms of money?

Senator **Nunn**. For what it does to our strategic capability.

General **Ellis**. In our analysis we always had the B–52's through the period. We had them shifting to ALCM carrier and we depended on the contribution of both the B–52 G and H models through the 1980's as ALCM carriers, especially the latter part of the 1980's.

The advanced technology bomber was the follow-on bomber that we recommended and I will get into the timing on that a little bit more.

In the near term, it is obviously not going to make any contribution, but in my opinion the ATB is one of the highest priority programs that we have.

The cruise missile, as I indicated, is a part of the bomber system; it is a supplementary system, just as the SRAM missile is, and we never looked at it as a separate weapon system.

Senator **Nunn**. Let me phrase it this way: Without getting into all the details you will get into in closed session, what can you tell us in open session about your belief in the B–1's penetration capability?

General **Ellis**. I think it is generally accepted by everyone that the Soviets are investing the kind of money in their atmospheric defensive system now and will be throughout the 1980's that they did in their ICBM force and submarine missile force in the late 1960's and through the 1970's. In other words, it is a tremendous effort; it will greatly increase their air defense capability, especially in the latter part of this decade.

Our studies would indicate that the B–1's would have questionable capability in terms of successful penetration to the degree that would be acceptable in war-planning in the early 1990's. We were never specific in the actual year. It is too hard to really pin that down. That is why we had the ATB coming in as early as possible and the date that we had was one that Systems Command had put their blessing on in the source selection.

Senator **Nunn**. We have been told by people who testified that the B–1 will penetrate until between 1995 and the year 2000. Do you agree with that?

General **Ellis**. I have seen in the newspapers Secretary Weinberger's comments before this committee when he said 1990 would be difficult. I understand he has modified that slightly in a letter to Chairman Tower, to talk about the mid-1990's or early 1990's. It is dependent, Senator, on ECM developments that have been mildly encouraging to date. We have depended on ECM in the past. We have historically lagged the offense with ECM countermeasures, effective countermeasures, on the order of 5 to 10 years, depending on the system.

While I don't say that it is impossible that we will have the ECM that can do it at that date, I say it is a weak crutch, and it is one that could be protected by early development of the ATB.

Senator **Nunn**. I don't know how you will handle this one in an open session, but I think it is of enormous importance in trying to decide what we are going to do in the strategic program.

The Soviet Union has been preparing its air defenses for a long time. How do you compare the Soviet air defenses that will be in existence, let us say, by 1990, if they continue on the route they are going now to cope with the B–1, as compared with the Soviet defenses that will be in existence, say, by 1990, to cope with the ATB in general terms?

What I am trying to get at, really, is what are the Soviets going to have to do to counter the B–1 that they are not already doing now, and what are the Soviets going to have to do to counter the ATB in terms of air defense that they are not already doing now?

General **Ellis**. Let me comment generally on that. I will say that there are characteristics in the technology of the ATB which require a great deal more advanced sensors, Soviet sensors, radars, both in the ground-to-air radars and the surface-to-air missile systems, than would be required for the B–1 or any other interim bomber.

Our calculations have shown that these characteristics of the ATB will be such that it will cause them great difficulty through the 1990's and into the next century.

Senator **Nunn**. Are you saying that the Soviets will have to do enormously more in air defense in terms of expenditure of efforts to cope with the ATB than they will with the B–1?

General **Ellis.** "Enormously" is difficult to measure, but they will certainly have to do a great deal more. When you talk with the industrial wizards of this country who are in the same business in terms of detection and they describe the problems they have in the development of systems that will be able to take care of the characteristics of the ATB, they don't know just how to do it.

If our people don't know how to do it and don't have an idea on how to do it now, I would say that the Soviets have an even larger problem. I don't know whether that is very helpful or not, Senator.

Senator **Nunn.** We can go into more detail, but would it be fair to say there is a very wide gap in terms of Soviet expenditures that would be required to cope with the B–1 air-defense-wise and the Soviet expenditures that are requied to cope with the ATB?

General **Ellis.** A great deal of the expenditures have already been planned and begun by the Soviets in trying to counter the ALCM. That helps very much with some of the characteristics that you worry about on the B–1, so much of what they are doing to handle the ALCM can be used as a fallout system for the B–1 problem.

The difference in the B–1 and the ALCM, of course, is speed, but speed is only one of three criteria or operational benefits or requirements that work into that solution. I can't give you—I don't think anybody has been able to figure out—the difference between exactly what will be required for the B–1 and Stealth, because we don't know even the magnitude of the problem to counter Stealth at this point. It is difficult when you don't know the magnitude of it to figure out the cost. We know, technologically, it is a very difficult problem.

Senator **Nunn.** If ECM is the means of what we are depending on, I think you called it a weak reed to hang on for penetration of the B–1 beyond the early 1990's, if you put the same ECM capability on the B–52, is there a large difference in the penetration capabilities between the most modern B–52 and the penetration ability of the B–1?

General **Ellis.** In terms of radar cross section, the B–52 and the planned B–1, there is a great difference there. The smaller the cross section, the less power you require.

Conversely, if you have something with a very large cross section, it is going to require vast amounts of power, power that perhaps you don't have even in the B–52. That is your problem. Of course as you get your cross section down your power requirements are reduced considerably, depending on how far down you can get it.

Senator **Nunn.** That is the advantage that the B–1 would have over the B–52, if you assumed equal progress on the ECM proposal?

General **Ellis.** Yes.

Senator **Nunn.** A lower cross section would give your ECM a greater opportunity?

General **Ellis.** I am not a real expert on ECM, but if it will work with one type of flying vehicle, it should work with the other. If you are able to put it out with enough power to mask a larger vehicle, which is what you are trying to do here with a B–52, it will also mask a smaller one.

Senator **Nunn.** General, what is your view on plans to retire the B–52's earlier than originally envisioned?

General **Ellis.** The calculations we did on the balance required the full force of B–52's be retained through the period.

Senator NUNN. Does that mean that you would strongly prefer or now prefer that they not be accelerated in terms of phasing them out? Is it an important factor in the overall balance?

General ELLIS. Senator, when you are measuring the strategic balance, you are looking at all of those systems that both countries have. It is hard to isolate one. Basically in our calculations we have the force structure, the B–52 force structure; we have IOC for the MX; and we have the continuing program on the cruise missile and on the Trident. All of those figure in the balance.

If you substract any element of that, your balance is going to reflect that, too.

Senator NUNN. Does that mean that phasing out the B–52's early will have a significant deteriorating effect on the balance in the next 4 or 5 years? Would you call it significant?

General ELLIS. No; I would not call it significant; it would have an effect.

Senator NUNN. Would you call it a modest impact?

General ELLIS. Yes, sir.

Senator NUNN. Mr. Chairman, I will defer the rest of my questions until the closed session.

Senator QUAYLE. General Ellis, if the Congress would say no to the B–1B, with the rationale being basically it is a fiscal and political consideration, we can't afford the B–1B right now, and the ATB is the best, what do you think that decision would do to the strategic balance?

General ELLIS. Along with the other impacts that are laid out on the present program or the President's program?

Senator QUAYLE. Yes, assuming that the Congress rejected the B–1B but ratified everything else. We will be getting into a debate on this in a very few days in the Senate. What I am trying to settle in my own mind is what are we talking about? What are the risks this country faces? What will be the strategic balance shift if, in fact, the Congress makes that decision? There will be a vote, I am sure, not to go ahead with the B–1B but to go ahead and basically try to accelerate the ATB.

General ELLIS. The requirement for an interim bomber, Senator, has not changed, it is there. If the Congress decides to delete the B–1B, then depending on when you bring in the ATB, you are going to obviously have a reduction in your capability to do anything about the balance.

Senator QUAYLE. Will the shift in the balance be significant if we don't go with the B–1B?

General ELLIS. In the latter part of the 1980's it will, the latter part.

Senator QUAYLE. What would you say to those in the debate who advance the argument that we ought to skip the B–1B, since its penetration capabilities are not as good as Stealth, that we can't afford the two-bomber approach, what kind of appeal would you make in support of both the B–1B and the ATB as has been proposed in the President's strategic package?

General ELLIS. Earlier this year, when I testified before this committee I listed three priorities in the following order and I recommended they be accorded financing in their priority—the MX, the ATB and the B–1B or the interim bomber as I think we described it, whether it be the B-1B or the low cost alternative, the FB-111. If the money is short you can start at the bottom of the list and you cut off there.

Anything you do with any of those three systems, just as you do with the force structure that Senator Nunn is talking about, will have an impact on the balance.

If you delete one, it will push it that much farther before you reverse the balance as it exists today.

I also said at that time in open testimony that if you have to take a gamble on the Soviets, I would rather gamble in the 1980's rather than in the 1990's, because you have a force structure in being that is being upgraded to a degree. In the 1990's we don't know just how good the Soviet defensive systems are going to be, not just for the air-breathing threat but also their ABM. We don't know whether they are going to break out on that, and we don't know how good they are going to be in ASW.

There are a lot of unknowns in the 1980's, but there are a lot more unknowns in the 1990's. That is why I would say that the risk, and the lesser of the two evils, would say delete the interim and go for the ATB. That was my rationale for that course of action.

Senator QUAYLE. Is your order of priorities that you gave us last spring on MX, ATB and the interim bomber the same today?

General ELLIS. In my opinion, it is.

Senator QUAYLE. In your opinion, you have not changed?

General ELLIS. No.

Senator QUAYLE. You still say MX is No. 1? Have you read the Townes report?

General ELLIS. No.

Senator QUAYLE. Do you have any idea what was the motivation for the decision on the MX? Can you give us any insight on why we deferred the basing mode and are now talking about hardening silos?

General ELLIS. I got this from the newspapers. One of the arguments that the Townes committee, and a lot of other academicians, came up with, in shooting down the MPS, had to do with the Soviets' capability to continue to outbuild them because they had a hot production base and they could always keep ahead of us in building ICBM's. We would have to spend enormous sums for shelters in order to counter them. But you have to remember one thing that I haven't heard being considered in that argument, and that is, in development of the MPS concept it was also considered that arms negotiations would be a part of the process and that there are ceilings in which they are so restricted.

Now, if you do away with the ceilings that were established in SALT I and proposed in SALT II, they obviously can outbuild us in MX; they can outbuild us in submarines; and they can outbuild us in arms. So, that argument does not hold water. You can't talk about any part of the strategic system with the Soviet production base and rule out arms reduction. I think the President indicated that the other day in the press conference.

Senator QUAYLE. You say basically the two have got to go together?

General ELLIS. That is right. It is not only the MX or a particular basing mode of the MX; it applies across the board in all strategic systems.

Senator QUAYLE. As regards your No. 1 priority on the MX, do you still favor the MPS as the No. 1 priority rather than the hardening of silos, with BMD?

General ELLIS. Let me put it this way, Mr. Chairman: I strongly recommend that we retain deception and mobility. Now, mobility is what provides the other two legs of the Triad's capability to avoid the threat. If you continue to have a static aiming point, then it is merely a matter of time before he has sufficient vehicles and sufficient CEP to take out any target that you propose to him if it is not mobile, and is going to always be fixed.

Senator NUNN. If you had to vote next week on whether to provide $2 or $3 billion to harden the Minuteman and Titan holes to put the MX in, as recommended by the administration, would you vote for that hardening money?

General ELLIS. Is there an alternative, Senator?

Senator NUNN. Next week we will have to either vote for it or against it. The alternative is not to spend any money on hardening at this point, and then waive a further decision on how you are going to base the MX. Another way to ask the question is: Will hardening really succeed in reducing the vulnerability of the MX to Soviet attack to the extent that would justify the expenditure?

General ELLIS. When the last administrator was having difficulty coming up with its basing mode, I recommended that, by all means, continue development and production of the missile, the MX missile. Until you find a place to put it and decide upon a basing mode, put it in the Minuteman silos. Now, we are not going to get any more survivability but we are going to get a few more warheads with every survivor. But that was only an interim solution.

Rather than hardening I would use that money in some other aspect. We need money across the board in strategic systems. I would rather use the hardening money in some other aspect and depend on the fact that that is just a temporary home for the MX, recognizing it is not going to be long.

Senator NUNN. Have you ever seen a study in your career at SAC in the last few years that would indicate hardening of silos is a realistic and plausible option for basing the MX?

General ELLIS. We have asked that question of the experts many times. The answer I always got is that they never knew how to harden them strong enough in order to protect them against a CEP which was believed to be the capability of the Soviets.

Senator NUNN. You explained last spring that MX was your top priority, ATB was your second, and the B–1B was your third. If you assumed the President's proposal with the MX, that is the hardening of possibly 40 or 50 of them, put them in their Minuteman or Titan holes, would you still rank MX in that mode as your No. 1 priority?

General ELLIS. Yes. Well, I missed the question for a moment. I had not thought about that, Senator.

Senator NUNN. Let us say you are going to do exactly what the President has asked, that is, harden 40 of them and defer any final judgment on a final mode until 1984, and then you had to make a choice between which is the No. 1 priority, MX as the President requested, the ATB, or the B–1B, how would you then rank them?

General **Ellis**. It is my understanding that there is a shortage of money.

Senator **Nunn**. That is not classified.

General **Ellis**. Senator, I can't give you a good answer on that. I would recommend putting them in the Minuteman holes. I would not put them in the Titan holes. I would not harden; I would try to advance the decision date on the final home for the MX closer this way. I am not answering your question.

Senator **Nunn**. If you failed on that and you had to vote, I am wondering in that case, would you prefer to put the MX still in No. 1 position if you did exactly what the President requested?

General **Ellis**. I don't know. Can I let you know about that? That is a tough one.

Senator **Quayle**. Your recommendation would not be to harden them but to go ahead and put them in the Minuteman silos and try to accelerate the eventual basing mode; is that correct?

General **Ellis**. That would be my recommendation, put them in the Minuteman, don't harden, and accelerate your eventual MX basing decision.

Senator **Quayle**. With the President's decision on MX and that has been the No. 1 priority, but with MPS, you develop the ATB and you get B–1B, you assume that we still haven't frozen on whether it is going to be deep underground basing, a Big Bird or whatever, BMD, maybe go back to MPS—is there any additional emphasis that we ought to give to the B–1B because of not going ahead with MX/MPS?

General **Ellis**. Obviously, that was a critical element. We were expecting MX/MPS to start coming in in 1986. Obviously, it is not going to make that now. If you didn't have that, you had better do something else in some other system, and the B–1 or interim bomber is even more critical now than it would have been if your MX/MPS was coming in.

The MX as a portion of the force structure, especially in sizable numbers, was the thing that really made the impact, the major impact, on the strategic balance, because in the ICBM force, unlike the other two legs of the Triad, you have almost 100 percent operational readiness at all times, whether you are in the day-to-day alert posture or generated. That was one of the big advantages of the ICBM.

So, a short answer would be: if you are not going to have the MX on schedule, you had better do everything else you can do, including getting the B–1B or whatever you are going to get, as soon as possible.

Senator **Quayle**. Is it your opinion that MPS has to be coupled with a strategic arms limitation agreement, whether it is SALT or whatever? Are you trying to say that the two are perhaps interrelated because of the apparent rationale for the rejection of MPS was the failure to make that viable politically, strategically and otherwise, that we are going to have to be talking about the two simultaneously?

General **Ellis**. As I said, it does not apply just to MPS; it pertains across the board, with any basing system you come up with, or any element of the strategic force, in my opinion.

Senator **Nunn**. General Ellis, may I ask you this question right here. You may want to answer this in closed session, but along the line of Senator Quayle's question, if you had your choice now, if you could get the SALT II limits on Soviet missiles and get the MPS system and go with the ATB and go with the cruise missile, basically what the Carter program would have been had we had SALT passed, or you could say no SALT limits and the Reagan program as it now exists, which of those, in your opinion, would better preserve America's strategic position?

General ELLIS. Senator, I had a running exchange of letters with a Congressman on that subject. I refused to answer that question because there are alternatives. If I may, let me explain.

The alternative today, the realities of today, are that this administration has said that they will continue with arms reduction. Both sides, without formal treaties, are honoring the limits that were established in SALT I and SALT II. I think there are things that we can get in addition to those that were available in SALT II with the full knowledge and support of this country—increased defense, strategic spending in the United States—that we could not have gotten in the last administration.

I am not saying that we are going to get them. The Soviets are in a great seat at the negotiating table, but it is worth a try so long as both sides continue to honor those ceilings. Those ceilings, in my opinion, are critical and they are a starting point, I would assume, for whatever we decide to do next year with the new negotiations.

Senator NUNN. In other words, you would be significantly concerned if the SALT II ceilings which we are abiding by now in a de facto way, if the Soviets were to break out of those ceilings?

General ELLIS. Very much so.

Senator QUAYLE. Let me ask one hypothetical question and then I will turn it over to the real chairman.

If you could get an IOC on Stealth by 1988 or 1989, would you opt for that and not the B-1B?

General ELLIS. Mr. Chairman, could I defer answer on that until we go into closed session?

Senator QUAYLE. Can you give a yes or no answer in open session? I realize it is a hypothetical question and a lot of people sort of shy away from that.

General ELLIS. I think from what I have said earlier today—and this is without explanation—that I would rather take the risk in the 1980's than I would in the 1990's. The earlier we get the ATB the less risk we have in the 1990s. I think that is about as much as I can say on that.

Senator WARNER [presiding]. General, I anticipate when we get to the floor there may be discussion relative to the roadmobile system, the desirability to perhaps study that further or determine the feasibility. Could you provide now your own impressions of how that system would operate and whether or not, in your judgment, it is a viable option?

General ELLIS. Is this the Senator Glenn version of the roadmobile?

Senator WARNER. Yes.

General ELLIS. Over the years we have looked at that. I think you will find we have looked at it a couple of times; it has certain advantages. The Soviets use that system.

Senator WARNER. With the SS-20?

General Ellis. Yes. As you know, they don't have the problem that we have to worry about.

Senator Warner. Let us define those problems because it is really a social interface problem; is that correct?

General Ellis. That is exactly right.

Senator Warner. You feel in their society in the absence of certain constitutional freedoms and other things, that they can thrust it on their people and the people will accept it; they don't have the threat of the system from their own citizens; is that correct?

General Ellis. Yes.

Senator Warner. Some of our colleagues are beginning to rethink this issue. Quite frankly, they are of the opinion that maybe the Congress is a better judge than the Department of Defense in relation to issues with social interface.

Do you feel that is the main objection to this system, or are there operational limitations? I would like to develop a record on this, if you would, please.

General Ellis. You know, there are operational limitations. It is a very vulnerable system in terms of exposure. In other words, its success as a system is deception; you can't leave it in one place very long with the open society that we have and the access that people have. It would be a very identifiable system. So, operationally that would cause you some problems.

You have another military problem, and that is the problem of accidents. A system of that type that is exposed, will be exposed to a lot more hazards than one that is protected in a silo or in a shelter of some type. So there are operational limitations, Senator, and they are not all tied to the social problems, acceptability problems.

Senator Warner. Of course, we would have to design a new missile, because there is nothing in the inventory at present that would be effective?

General Ellis. That is right. MX is too big.

Senator Warner. There are size limitations on any missile that we could design?

General Ellis. There are problems with arms control on a system of that type, too.

Senator Warner. Verification?

General Ellis. There are ways you could work around that. You would do it just like we do with submarines. You check them out on assembly and then they go into the ocean. In this case they would go into the hinterland of the United States. Whether that would be acceptable in this case or not, I don't know.

Senator Warner. How would you feel about eliminating the MX at this point in its development in order to start design and development of new ICBM's for the road missile system? I judge you have assumed that.

General Ellis. I think so. I would not recommend it.

Senator Warner. General, there has been a good deal of discussion on the improved capability of the proposed B-1B to cut down the launch time and therefore improve its survivability. Do you also attach a good deal of significance to that added development?

General ELLIS. Well, I add significance to it, Senator, but you have to remember that at the present time from your ICBM threat you have 30 minutes approximately.

Senator WARNER. I think it is the SLBM threat.

General ELLIS. On the SLBM, for those bases that are threatened by the SLBM, timewise you take it up to the limit of the escape time. Then when you crowd that limit you disperse your forces to other bases.

So, there are ways to work around that. Obviously, if we are building a new system, an improved escape time would certainly be desirable.

Senator WARNER. It is our understanding that the B-1B will have a capability to cut down that time.

General ELLIS. That is my understanding, yes.

Senator WARNER. The committee will now go into closed session.

[Whereupon, at 3:05 p.m., the subcommittee proceeded in executive session.]

EXECUTIVE SESSION

Senator WARNER. Gentlemen, can we start off with the C^3 package?

As you know, the President has announced an even greater enhancement of this system than was envisioned at the time you and I worked on it. Do you think that this enhancement is adequate, or do we still have some deficiencies?

General ELLIS. As I understand it—and I have not been into it in great depth, Mr. Chairman—as I understand the proposed system, I have seen the different items that have been added on, and I have talked informally with people who were both familiar with it and knowledgeable, they are delighted with the system and just hope it will continue that way over the years, because it is going to take a while to do.

Senator WARNER. Let us turn to the B-1B and its penetrating role. There has been a great deal of debate back and forth. I don't know whether we asked the general in open session about the period of penetrability of this B-1B.

Did you answer that in open session?

General ELLIS. Generally.

Senator WARNER. Do you have anything to add in closed session?

General ELLIS. Yes. Let me say this: I think you probably heard it before, Senator, earlier this year.

Our studies that we ran over a year ago indicated that the B-1B or any interim bomber with the characteristics of interim bombers as we know them—with an RCS of around [deleted]—would have great difficulty penetrating in the early 1990's and on. The unknown there is how successful we will be in our ECM.

There have been some improvements in ECM. For instance, the [deleted] which will be most helpful. But in my opinion the ability of an interim bomber to penetrate in the early 1990's and beyond is still questionable, and my recommendation or my opinion would dictate the earliest possible development of the advanced technology bomber, the ATB.

Senator WARNER. Turning to the ATB, it may not be suitable as a carrier of externally mounted cruise missiles, as well as other armaments. If we were to skip the B–1B, is there an alternative means that we could use for such missions if the B–52's are retired?

General **Ellis**. Our recommendation, Senator—or my recommendation—made earlier this year was that the G's be completely converted to the cruise-missile role as soon as possible and that we start doing the H's in 1985, so that by 1990 the entire B–52 force is in a standoff role.

We felt that could carry us well into the 1990's if we have gone through the great expenditure of the interim bomber, the MX and the ATB. At that time we could get into the business of a followon cruise-missile carrier.

I have not seen anything that would tell me that there was anything wrong with that course of action, considering the fiscal constraints.

Senator **Warner**. The President proposes to acquire additional AWACS aircraft and additional F–15 fighters to augment the air defense of the United States. How serious do you believe is the threat to this country from the Soviet Union?

General **Ellis**. As you know, they have a bomber with an intercontinental capability in production at this time. It was estimated that by 1985 they could have [deleted] of those.

Senator **Warner**. You are speaking of the Backfire?

General **Ellis**. Yes.

Senator **Warner**. When you say "capability," that is with refueling?

General **Ellis**. Yes, sir, that poses a threat. I think that the emphasis the administration has put on the defense of the United States in terms of AWACS and the F–15 defensive fighters is justified.

Senator **Warner**. Is justified in view of that?

General **Ellis**. Yes, very much so.

Senator **Warner**. Now, Senator Nunn and Senator Quayle had questions pending that related to your comparison of the Carter program with the Reagan program as it relates to the window of vulnerability. Would you care now to provide for the record your thoughts on that?

General **Ellis**. Mr. Chairman, you may remember the chart that we showed you on the strategic balance in the Carter program, and the Carter program as I am describing it included an IOC of 1986 for the MX. They had not pinned down the ATB at the time of the administration's departure, but it was in the program.

The ALCM program was underway and two Trident submarines every 3 years were scheduled.

With those improvements and with the current B–52, Poseidon, and Minuteman force, you will remember that after the MX came in during the latter part of this decade the balance kept increasing, but it never got back to the level of essential equivalence that we need as a baseline, and existed in 1977.

That is the reason we recommended the interim bomber. That got us back in the [deleted] time period in the fully generated mode and in the [deleted] period day to day.

The Carter program did not include an interim bomber. Of course, that was the big step that the Congress made in the summer of 1980 when they added $300 million in the budget and asked the Pentagon to come up with their recommendations this March on a new bomber.

So we never really got back this program that we are talking about now. We slipped the IOC of the MX to a date that is not at all firm, with the exception of those that we put in silos.

In the follow-on ALCM, the advanced ALCM, production has been slipped and we are holding it in R. & D.

The B-52's are being phased out in the next 2 years, and to base *x* number of MX's in either the Minuteman or the Titan, while it keeps the MX program on line, does not provide an overall increase.

So, with the preliminary calculations I have seen—and I have not gone over them in detail with the experts—it would indicate that as we start phasing down the B-52D's and the Titan or Minuteman holes to put the MX in, we will have a slight decline in the balance adverse to the United States beyond that which was in the Carter program.

With the B-1 and no MX, we will get back in [deleted] not quite to the point that the Carter program would have gotten us. I would like to look at those figures in a lot more detail before I say that is exactly the way it is, but it tracks with what has happened to the force structure.

Senator, let us say you put the MX in Minuteman holes. When you take a Minuteman out you are losing its three warheads and you are losing an MX in MPS that had 10, so you are dealing with a total of 13 warheads. When you get the MX in tht hole, now you are dealing with a total of 10, so you are really not where you were before.

Senator WARNER. Senator Exon, would you like to have the opportunity to ask some questions?

Senator EXON. Thank you, Mr. Chairman.

General, thank you for coming. I apologize. We have a Budget Committee meeting going on today which has taken me away. I didn't know until just before noon that you were going to be here. I wish I had been here for the whole hearing. I have been briefed on what you have said in open session. We miss not having you here.

Let me get into a few things and get your thoughts on them. You indicated in open session, as I understand it, that you felt if we are going to put the MX in a hole, we should put it in Minuteman holes, and you did not really believe that strengthening those holes was a very viable option. Is that a fair assessment of what you said?

General ELLIS. Yes, sir.

Senator EXON. Let me go into this matter. We have talked about this before and I just want to state for the record so that our colleagues will have a chance to look at it. Why do you say Minuteman holes, if we go that way with the MX, as opposed to Titan?

General ELLIS. Well, the Titan has certain advantages, antiquated as it may be. It is a very large weapon and against certain types of targets it is particularly effective—the [deleted] targets. It would take [deleted] or [deleted] Minutemen to cover the same number——

Senator EXON. To do the same job?

General ELLIS [continuing]. To do the same job, yes, sir.

Additionally, I would hope that we would not give away systems like the Titan. It is the only heavy missile we have.

[Deleted.]

I guess the other point is that at the present time we are observing the SALT I and II limits, and if we put them in Titan holes, then we are gradually getting up to that ceiling of MIRVed vehicles, because where we had a single warhead missile that counted one way, we would now have a MIRVed vehicle.

So I think all in all the Minuteman hole would be more practical.

Senator EXON. Let me inquire, General—I take it from what I have heard you say here, that when you are talking about Minuteman holes you are talking about Minuteman III rather than II for the MX; is that correct?

General ELLIS. That is right.

Senator EXON. Why is that?

General ELLIS. As I understand it, as I recall there are only 550 Minuteman III holes and there are only 400 Minuteman III holes that the MX will fit in, and they will not fit in Minuteman II holes.

Senator EXON. I did not understand that. Is there a difference in the size of the holes between the II's and III's?

General ELLIS. There is.

Senator EXON. I didn't know that. What you are saying is that it would be easier to put them in III holes because you would have to rebore the Minuteman II holes; is that right?

General ELLIS. Yes.

One other point you ought to keep in mind, Senator, is that the Minuteman II has a [deleted] warhead. The Minuteman III has either a [deleted] depending on whether you are dealing with Mark 12 or Mark 12A. There are a lot of uses for weapons of the size of the single warhead. Also, we are not up against the ceiling in single warheads that we are in the MIRVed warheads.

Senator EXON. Let me ask you this question: In your view, if we did put the MX in Minuteman silos, is that a violation of the SALT agreements? We have been told that it would not be a violation to put them in Titan holes, but it might be in the Minuteman holes.

General ELLIS. It is my understanding it is the other way around. If you put them in MIRVed holes, it is not in violation. All you are doing is increasing the number of warheads you have on those MIRVs.

But today the Titan is not a MIRV, it is a single warhead and it is not a violation. You would have to keep it within the overall MIRVed ceiling. If you have exceeded that, then, of course, it would be a violation.

Senator EXON. What about the strategy that we keep hearing about which is still in the background, although it has not been advanced significantly, the antiballistic missile defense strategy, what are your views on that?

Put out all the pros and cons and what you know about the state of the art and so on. Do you think it is something we should be exploring more, or do you think we should be leaving that alone?

General ELLIS. It is certainly one that we ought to keep in research and development. We are looking at two types of ABM. We are looking at low altitude and we are looking at exoatmospheric defense. We should continue efforts on both of them.

First of all, it is a very expensive system. The application of it would depend on the kind of basing mode you are coming up with in the MX. In the MPS system, for instance, you can get ABM defense relatively inexpensively as compared to defending Minuteman silos.

Senator EXON. Or Titans?

General ELLIS. Or Titans, where you have to have your defense for every site. Of course, you get the defense you need in the MPS because under the original system you needed one offensive missile and you neded one defensive missile if your deception works.

Senator EXON. I suppose that is one of the additional reasons for looking at Minuteman holes. As I understand it, they are geographically arrayed to where, if we were going to go to antiballistic missile defenses, it would be simpler to do that in Minuteman arrays rather than widely spaced Titans, is that right?

General ELLIS. That is right.

One other point on the Minuteman versus Titan holes, if they are going to harden them to 5,000 psi, there are [deleted].

Senator EXON. Are those Minuteman III's.

General ELLIS. Yes, they are. As I recall—I have the precise figures here—[deleted].

Senator EXON. You testified earlier that hardening is not one of the options that you think we should look at?

General ELLIS. In my opinion.

Senator EXON. Is it fair to say then that you feel that if we are going to deploy the MX in existing holes, it is better to take our chances by just putting them in the holes as they presently exist and take our risk?

General ELLIS. Yes, sir. The administration said this is an interim fix; they are looking for a final basing mode. As I indicated earlier, I would recommend, that we put the missiles in without hardening them and then move our decision date on the final basing mode for the MX this way.

Senator EXON. Ahead of 1984?

General ELLIS. Yes.

Senator EXON. Would you briefly outline what options you would be looking to as the situation confronts us today? If we are not going to MPS and we are going to go to Titan or Minuteman holes, you just said you wish they could push up that 1984 decision, obviously 1983 or 1982, what option do we have there?

Let me pose the question: What would you be looking to?

General ELLIS. As we talked earlier, Senator, my recommendation was that we look at a system that employs deception and mobility.

Senator EXON. That is MPS, isn't it?

General ELLIS. Or a variant of MPS. You may recall the tunnel.

Senator EXON. Yes.

General ELLIS. That is deception and mobility. Of course, the MPS was designed by the Carter administration. There are versions of the Carter MPS that could satisfy the mobility and deception requirements.

Senator EXON. What about the practicality, in your opinion, of hiding them on the right or wrong side of the mountain, depending on which side you are on? You have looked at that, I am sure.

General ELLIS. I have.

Senator EXON. Do you think that is viable?

General ELLIS. We looked at that very seriously. As I recall, back in the late 1960's when we looked a it, we incorporated that with a very hard silo, but it was discarded, as I recall, and I don't really have a full recollection on it, but as I recall, it was for money and uncertainty as to whether or not it would survive against a low CEP and a large weapon.

Senator EXON. You would have to involve mountains in this; I guess that is part of the defense. Wouldn't we have an environmental nightmare on our hands, going up in the mountains and building something like that? We have difficulties in the desert; we would have untold difficulties environmentally in the mountains, would we not?

General ELLIS. I would think so, very much so.

Senator EXON. What do you think of the Big-Bird technique?

General ELLIS. We looked at the air mobile, two or three times. I don't think we ever looked at the Big Bird. That one version might take a whole year or really 2 years to shake down. I am inclined to think that enough is known, the Air Force knows enough about airplanes to know that we have big problems with that concept in terms of basing it, in terms of being able to keep it where it cannot be tracked by the Soviets.

It would be a very slow-moving target, but I really don't know enough about the pros on that to really talk. All I know are the cons.

Senator EXON. When you looked at some variation of a flying launcher—that is really what it amounts to—you were talking about existing aircraft and not a new airplane specifically designed for that purpose?

General ELLIS. I think we looked at both, Senator. I think the look we had under the Carter administration, before they came up with the MPS, was a new aircraft; it was not anything like the Big Bird, though.

Senator EXON. That new aircraft, wasn't that a Big Bird? How did it differ from the Big Bird?

General ELLIS. The Big Bird is one that can stay up for maybe 24 hours.

Senator EXON. Isn't that what we are talking about?

General ELLIS. No, we were talking about dispersing them to a lot of bases and sitting alert and then scrambling on warning.

Senator EXON. Then with the Big Bird, at least they are up there in the air, ready to go if the button is pushed; is that right?

General ELLIS. Yes, sir.

Senator EXON. Let me get into one other question which I have on the hardening of the silos.

We received testimony not too long ago, that one of the reasons that we should harden these silos is that it would give us additional protection from Soviet SLBM's. I asked a question on that and, in return, did not get a satisfactory answer. Unless there is some new technology that I had not heard of, I wouldn't imagine that the Soviets have enough accuracy with SLBM's to be of any threat to our silos—hardened or not. What comment do you have on that?

General ELLIS. I think at the moment, as I recall, the last CEP's that they achieved with their SLBM's would not be very useful against our ICBM's.

Senator Exon. Hardened or otherwise?

General Ellis. That is right. We have watched them bring their CEP's down in everything else, and in my opinion it is just a matter of time before they do the same with their submarines.

Senator Exon. Do you think there is any chance of looking further? When you were still in command was there any indication that the present administration looked seriously at your suggestion of using the FB-111 along the lines that you had recommended to us previously, in lieu of a B-1 variant?

General Ellis. I must say that is one of the things I have never been able to understand, why it did not get a better look. I don't think it really got a good shakedown in OSD or here on the Hill.

Senator Exon. Let us get into the B-1 and all of these decisions. As I understand it, you said—and I am more or less in a mood to be moving in that direction myself—if we are going to eliminate MPS, then I guess we have to do the next best thing or things to provide us the maximum protection that we are all concerned about, including the window of vulnerability which I happen to think has been thrown open wider than closed by the recent action.

I think you hinted on that. I don't want to press you on that further, but I would like to have your information. Specifically, I believe you also testified in open session that you did not believe that the B-1 variant would be a very effective penetrator much beyond 1990; is that correct?

General Ellis. I think the way I put it, Senator, was that there would be a considerable uncertainty as to its effectiveness as a penetrator in the early 1990's and beyond, and the uncertainty is tied to the effectiveness of ECM. We don't have a very successful audit trail on our ability to come up with ECM in a timely manner. That doesn't mean that we can't do it, but it is a gamble. It is one that we wouldn't have to take if we moved out on the ATB vigorously.

Senator Exon. Let me follow that up a little bit, if I may, because I am really seeking information which has me puzzled.

We are advised that the first operational squadrons of the B-1 variant will likely not be available before 1986. Is that about your understanding?

General Ellis. I think the IOC, initial operational capability, is around October of 1986.

Senator Exon. It seems to me, on testimony that we have received in this committee from the Secretary among others—and if we also try to gage what you are saying—it seems to me that we couldn't anticipate that the B-1 variant would be a penetrator for reasonable certainty for more than 5 years. If that is true, we are in that general area, how do you justify, or what justification is there, to spend between $20 and $30 billion for 100 of those bombers? I recognize they will still be there to carry on; we have to have something to take over after the B-52's. Give me your rationale of why you would be voting to spend roughly $30 billion for 100 B-1's which after they had been in existence for 5 years, would be essentially a good cruise-missile carrier and a good bomber for conventional warfare? Is that about the choice that I have to make?

General Ellis. That is the way I look at it, Senator. If you did not have fiscal constraints and we had everything we needed, the interim bomber is a valid requirement. There isn't any doubt about that. It is a valid requirement.

As I indicated earlier, my priorities are the MX, the ATB, and the B-1B or the interim bomber.

There is a requirement for all of them if you don't have fiscal constraints. If you do have fiscal constraints, you start chopping at the bottom.

Senator **Exon**. What is at the bottom?

General **Ellis**. The B-1.

Senator **Exon**. What was your interpretation the day you left as to when we might be able to see operational the advanced-technology bomber?

General **Ellis**. I tracked that very closely, Senator. The date that I used was the date that was provided by the Air Force office that is responsible for source selection and evaluating capabilities like that, I am talking about the Aeronautical Systems Division. They said on several occasions and in front of several authorities that [deleted] was the date that they could make with acceptable risk. I have seen nothing or heard nothing that would change my opinion on that. The contractor will tell you [deleted]. That may be, but I would still hold it for the [deleted] date.

Senator **Exon**. What is your answer, General, to the testimony which we have received on numerous occasions on this matter the ATB, that is a high risk venture, this is a new aerodynamics. It is [deleted] yet it really isn't, and yet if that didn't fly we would be running a very high risk indeed if we went and tried to leapfrog from the B-52 essentially to the advanced technology bomber? What is your answer to that? You don't believe it? It is a judgment call, isn't it?

General **Ellis**. I am looking at the expert, and I asked him specifically. I said, compare this program with other programs that you have evaluated and what is your risk? He said, "I am very comfortable with this date." Now, maybe something has come up in the interim, in the last 3 months, that I don't know about.

Senator **Exon**. If it has, we have not been advised of it. We are back to where we were on the advanced technology bomber, I think, 2 or 3 years ago, when we were speculating on how soon we could bring it on line. I am convinced if we go ahead with the B-1 that we are without question going to delay, operationally, the advanced technology bomber, which concerns me a great deal. There isn't anything in this world that is not without risk, especially in the business you just got out of, but it is a very deadly and very serious business.

It is true, and I think you put it very well, that if we didn't have any fiscal restraints, we would go ahead with the whole works.

General **Ellis**. It is my understanding when they talk about slipping from [deleted] it was done for fiscal reasons.

Senator **Exon**. They are now telling us, General, that really they don't expect any sizable operational activity on the part of the ATB until [deleted].

General **Ellis**. I don't know what they are talking about there. If you have a [deleted] IOC, that is one operational squadron. Obviously, you would not have a large capability for 2 or 3 years. If you are talking about [deleted] IOC, you have one squadron in [deleted] and you would not have a large capability until [deleted]. Maybe they are talking about a force as opposed to an IOC.

Senator Exon. If you were SAC commander or planning on being SAC commander in 1993, let us say, and I told you that money wasn't any problem, tell us what you need. If I were asking you that question today, would you say, "Yes, under those circumstances, I think we should proceed full speed ahead on both the B-1 variant and the advanced technology bomber." I presume your answer would be "yes"?

General Ellis. Yes; it would be.

Senator Exon. Suppose I told you, "Well, General, that is true, I wish we could do that, but we have a few other things to consider rather than one or two bombers. I am sure you would like two or three or four bombers, but the key question is, I suspect that you still would feel that we probably would best serve the interests of the Nation by pushing ahead, full speed ahead, on the advanced technology bomber?"

General Ellis. Yes; and on the MX.

Senator Exon. They tie together, don't they?

General Ellis. They do; they are both parts of the whole strategic posture.

Senator Exon. When you say the MX, I think without question we are going to go ahead and build the MX missile. The difficulty we have is what kind of basing mode we are going to have, and what the risk of survivability is from a Soviet first strike?

General Ellis. Exactly.

Senator Exon. Senator Nunn is back and he may have a question or two. I appreciate the information you have given us.

To clarify it in my mind, you said that if finances were a concern, then the B-1 would be on the bottom of the list of priorities. What are the two items above that?

General Ellis. The MX is first, and the ATB is second.

Senator Exon. Thank you, General. Could you stay just a few minutes? I will see if I can get my colleague back in here. We cannot order you around anymore. You are here serving on your own time.

Senator Nunn. General, I don't want to go back over what Senator Exon has asked. I had people coming in and I had to leave the room. If you have answered these questions, just say so.

One thing that the Air Force is talking about on the B-1 now versus the other programs, they have indicated that the the cost of extending the current air-breathing force, the B-52's, to the year 2000 is roughly $94 billion and the cost of the B-1 and the ATB program is only [deleted]. Do you have any charts showing that?

General Ellis. No; I would have to look at the figures. They must have ground in new B-52 engines.

Senator Nunn. I think they have ground in 50 billion dollars worth of modifications.

General, what are your views on the B-52 versus the B-1 survivability on the ground in the United States?

General Ellis. We have touched on that, Senator. Against a time urgent threat like the SLBM?

Senator Nunn. Right.

General Ellis. We always postured the force so that when we reached the point where we could not make a safe escape, in other words get a mile or two away from the airfield before the first weapon could impact, we started dispersing the force. In other words, if a coastal base could handle four B–52's, and the fifth B–52 would be a risk, from the fifth on we would disperse them to inland bases and put them on alert at these bases.

So, there are ways of working around that with a B–52.

Obviously, if you are going to build a new airplane, you should try to make your escape capability as good as you can.

Senator Nunn. One of the things that is being argued about the B–1 is that the survivability rate will go up tremendously versus the B–52 because of the quick escape. As I understand what you are saying, that is true unless you do something to the B–52, but you can disperse it and put it in bases that will give it more survivability; is that right?

General Ellis. That is what our plans called for. I don't know whether they were talking about air-burst weapons, massive ones, over the United States and destroying the bases.

Senator Nunn. I think they are talking mainly about the SLBM threat.

General, we talked in open session about the magnitude of expenditures that the Soviets would have to have in order to cope, air-defense-wise, with the ATB. Can you tell us more in closed session how you analyze that spending requirement by the Soviets to deal with the B–1 versus the ATB?

General Ellis. You can get the B–1B down to a [deleted]. We are talking about [deleted] is useful when you incorporate it with speed and low altitude. You can't compare it though with the problem you are faced with with a [deleted]. The B–1 [deleted] an RCS as the cruise missile has—our cruise missile.

The Soviets have taken great steps and have carefully geared their air defense system against the cruise missile. That decision was taken in the winter of 1977–78 after our B–1 decision, President Carter's decision to go with the cruise missile. To do that, they are looking at shoot-down capability, look-down/shoot-down capability, of their fighters and they are looking at AWACS.

As I indicated in open session, Senator, we have talked with the contractors, people like Hughes and the other people who make the best radars in the United States, airborne radars and ground radars, and they don't know how to look at something as small as our ATB would be and they don't know how to get there.

So, we never really were able to figure out any precise number. We know that they can see a B–1 with a [deleted] and we know generally how much of a problem that is; but how much of a problem it is, the difference is between that and out here is dealing with the unknown. If we don't know how to design it, I think the Soviets are going to have trouble.

Senator Nunn. When I was out in SAC in July, there was a figure tossed around, and again it was with a lot of caveats, about the unknowns and so forth. There was a figure tossed around there of $200 to $300 billion difference.

General **Ellis**. I think they got up a little higher than that. It was a tremendous sum.

Senator **Nunn**. $300 to $400 billion, something in that nature, as to what they would have to spend in order to cope with ATB; that is not a hard figure?

General **Ellis**. No. [Deleted] because you are out in this unknown area here.

Senator **Nunn**. General Ellis, what is your priority that you would attach to the advanced technology cruise missile program?

General **Ellis**. [Deleted.]

Senator **Nunn**. I asked the question the other day of a witness from the Defense Department, how we could afford, with the window of vulnerability we have on us now, how we could afford to really in effect slide that program. There is debate whether it has been zeroed out or whether it has just been delayed—I think no doubt at a minimum it has been delayed—how we could afford to do that? The answer I got was that the advanced cruise missile did nothing at all about the window of vulnerability [deleted] than any other cruise missile, or than the B–52, for that matter.

What do you think about that argument? I am not quoting exactly but the argument was, in effect, that yes, the advanced cruise missile will penetrate more [deleted] and it does not do anything to close the window of vulnerability, [deleted].

General **Ellis**. When we figured out our balance chart, we always took into account [deleted].

We always put factors in there. Now, maybe they have come up with some new factors I am not aware of, but that was always calculated in. It is a factor you have to calculate.

For instance, on the B–52 today we figure we have somewhere between [deleted] over the target capability. There are a lot of things factored in there, such as prelaunch survivability, enroute survivability and weaponry reliability, system reliability.

Senator **Nunn**. You would not define "window of vulnerability" simply being one of survivability on the ground in this country?

General **Ellis**. Yes. There is a little security problem on that, but I will be happy to mention to you privately that I think is one of the problems.

Senator **Nunn**. The window of vulnerability has a much broader definition in terms as SAC uses it than simply survivability on the ground in this country?

General **Ellis**. Yes. If you have a [deleted] of a B–52 penetrating to the midpoint of its target system, then certainly the ALCM, which does not have to go so far on the B–52, is going to have a better one. While he is riding on the B–52 so he will have the same vulnerability that the B–52 does or any other carrier.

Senator **Nunn**. Do you think the Soviet air defenses would be complicated by having to deal with different threats at different altitudes, including a threat by the ATB at a different altitude from the regular cruise missile?

General **Ellis**. Yes. I think you should have a low level capability and you ought to have a high level capability; that is factored in.

Senator NUNN. General Ellis, have you analyzed, or could you give us, your views, if you had one chart that would show the residual weapons and so forth, Soviets versus the United States, posing first strike by both sides, have you seen any charts indicating what the residual weapon counts would be under the Reagan program compared to what it would be under the Carter program?

General ELLIS. I do. I must tell you that I have not gone over the detailed calculations with the planners on this. I have a chart which would indicate that the residual weapons between the Carter program—let me say between the 1980 consolidated guidance force structure and the present planned program, something like the Carter program, is [deleted] generally in that ballpark.

Senator NUNN. What year is that projected to?

General ELLIS. To the period 1990.

Senator NUNN. We had the Air Force chart the other day that showed that approximately [deleted]. Do you recall seeing that chart? Do you have any way of commenting on that?

General ELLIS. No; I don't, Senator.

Senator NUNN. We have this Air Force study right here—bomber alternative study. It is not on that particular point, but it is another point; it says that if more than 1,000 bomber weapons were required, the B-1 variant was the most cost effective alternative. In the worst case comparison for the B-1 variant, where ECM did not work; that is, zero percent terminal ECM, and the ATB, too, had its best radar cost cross section. the B-1 variant delivered [deleted] at a savings of $7 billion—have you ever seen anything like that?

General ELLIS. I have no idea how they ever arrived at those calculations.

Senator NUNN. Generally speaking, would you agree or disagree with that?

General ELLIS. I don't know what the weapon loading is. I am sure the weapon loading on the B-1 is something like 38 weapons. I am not sure on the ATB, [deleted].

Senator NUNN. I would like to submit a couple of statements to you for the record on that. The question is how we handle this. Both of them will contain classified material. Maybe the staff could suggest a way just on those two points.

I would like General Ellis to have a chance to take a look at this assumption and give us a reply.

General ELLIS. I would have to go to the Air Force and get it.

Senator NUNN. I don't want to load you down with these kinds of questions, but both of those are pretty important assumptions.

Mr. GAFFNEY. I think there is no problem getting in broad outlines the kinds of assumptions and calculations that go into the study. Getting into the specifics of what the ATB is capable of doing makes it awfully difficult to have that be a part of even this classified record. We can try to work out something.

Senator NUNN. Try to work it out. I would like to get his answers on those two questions, if nothing more than just telling the staff, so that we can get it passed back to us. I think that would be helpful for the record.

General, I don't have any more questions. Again, I thank you very much for continuing to be of great assistance to the committee.

General ELLIS. That is my pleasure, sir.

Senator NUNN. There are other questions for the record that the committee would like to ask you.

I think we should consider General Ellis does not have quite the staff access he had before in answering.

General ELLIS. The staff is zero.

Senator NUNN. You would not want 1,000 questions for the record, would you?

General ELLIS. No; please.

Senator NUNN. Have you fully recovered?

General ELLIS. Yes; I am fine.

Senator NUNN. Great.

General ELLIS. If I could talk to you on that one question.

Senator WARNER. I will insert questions for the hearing record.

[Questions submitted by Senator John W. Warner, answer supplied by Gen. Richard H. Ellis, USAF (Retired) follow:]

QUESTIONS SUBMITTED BY SENATOR JOHN W. WARNER

Question. What significance do you attach to the introduction of large numbers of nuclear-tipped, land-attack cruise missiles—to be deployed aboard nuclear attack submarines?

Do you regard such a deployment as a useful strategic reserve?

Can these systems, or the airborne counterparts, ALCMs, replace prompt, hard-target, kill capable ICBM RVs?

Answer. It is my understanding (and the Navy is probably more qualified to answer this question) that sea-launched cruise missile (SLCM) deployment is restricted by the SALT II protocol. [Deleted]. However, neither SLCMs nor ALCMs can replace the prompt, hard-target kill capability of ICBM RVs. Even though both cruise missile versions have the ability to destroy hard-targets, they can not be classified as prompt because of their relatively long time-of-flight. [Deleted].

Question. What significance do you attach to the improved capability of the B–1 to escape attacks on its airfields relative to the B–52's capability for base escape?

How great a factor must that be in any consideration of the need to replace our B–52 fleet?

Answer. Slight increases in the current SLBM threat to B–52 bases can be countered by dispersing the force to other bases as the B–52s become at risk. The critical threat factors which force dispersal are SLBM time-of-flight, SSBN locations (proximity to the U.S. coast), and the total number of SSBNs within close proximity to the coasts. To my knowledge there is [deleted]. It is this technical feasibility that argues for the improved base escape capability of the B–1. However, the driving justification for the B–1B is the IOC slip in the MX and ATB programs and early deactivation of B–52Ds and Titans.

Question. General, do you believe that there is any chance that the administration will reconsider and resuscitate the MX/MPS program?

In view of that, do you agree that the best we may be able to hope for as far as MX is concerned is that it be deployed in silos—whether hardened or not?

Doesn't a significant closing of the strategic "window of vulnerability" require that, given that deployment of MX dictate that we have an interim bomber as soon as possible?

Answer. I am not in a position to speculate on the probability of reversal of the administration's MX/MPS decision. In the context that the administration has said that their silo plan is an interim fix, I would recommend that the MX be deployed initially in unhardened silos, and that we accelerate the decision date on a final deceptive and mobile basing mode. I hope your question does not insinuate that interim silo basing of MX would be permanent.

The interim bomber will compensate to some degree for the lack of a survivable basing mode for the MX in terms of the overall strategic balance. In this context the interim bomber may do little more than slow the deterioration of the strategic balance in the 1980's until MX is based in sufficient numbers and in a survivable mode.

Question. Would you elaborate for the record on the liabilities of the road-mobile ICBM system as you view them?

Answer. We have looked at that system several times over a period of years. Aside from the environmental issues, which are considerable, there are also a large number of operational limitations. This system is extremely vulnerable in terms of exposure, meaning you can't leave it in one place very long. This in turn creates significant societal problems as well as security problems. Another operational problem is the larger probability of accidents. Finally, there is the problem of allowable size and weight on our roads. A new missile would have to be designed, and even a new missile would be, at times, severely limited in mobility because of adverse weather conditions.

Question. You indicated that, in effect, the Reagan program could represent a deeper strategic bathtub and an ultimate net strategic posture which is slightly less capable than that under President Carter. In your opinion, would the refusal of the Congress improve that situation or worsen it?

Answer. In my opinion, the refusal of Congress to approve the strategic improvement package of the present administration would only worsen the growing imbalance. Although I would have recommended a different program in specific areas as outlined in my testimony, I don't believe the Nation can afford any more delays in strategic modernization.

Question. When you were at SAC, was consideration ever given to using MX Boosters to deploy the Titan [deleted] warheads?

What are the pros and cons of such a deployment?

If one is concerned about losing the equivalent megatonnage quotient which the Titan warheads represent, wouldn't such a load-out on MX make sense?

Answer. A study of various alternatives to replace the Titan missiles was accomplished. One of the options was placing MX missiles in Titan silos with an adaptive version of the Titan MK–6 reentry vehicle. Advantages of this option included keeping wide area target coverage capability, providing a large yield weapon with an improved CEP, and not reducing the number of launchers with the phase-out of Titan II missiles. Conversely, this option required some modification and testing of the MK–6 RV, the IOC was estimated to be a minimum of five years from go-ahead and this option did not limit the collateral damage caused by a large megatonnage weapon. Also, under current practice, MX would have to be counted as a MIRV system even though it would be deployed with a single warhead. Finally, the vulnerability problems of the Titan silos makes this proposal of doubtful benefit.

The military target base contains a [deleted] targets than the economic base. The capacity of large weapons for doing concurrent damage to co-located soft targets is of little additional value against such a target base. The prime requirement against such a target base is for a large number of accurate warheads. Since each launch vehicle can carry greater numbers of the smaller (but sufficiently accurate) weapons, an ICBM force equipped with multiple small weapons has greater counter-military potential than the same number of ICBMs equipped with larger but fewer weapons.

Question. General, isn't it true that, if you fix the design of the ATB earlier rather than later, given that there is a certain amount of uncertainty and technological risk which remains to be resolved with the ATB, that we will pay substantially more to correct deficiencies in that design which become apparent after it is fixed and in production than we will if corrections are integrated into the design before production?

Answer. The fundamental questions here are affordability of a less risky but lengthened ATB program in terms of the strategic balance, and the nature of the risks in terms of basic design validity. Although the ATB will be [deleted] built using this particular technology, I do not see major [deleted] design problems that put the effort in the high risk category. However, it is a unique design and there is the possibility that problems could develop [deleted].

Unless something has come up in the last three months that I don't know about, I believe that both the probability and price of this type of miscalculation is relatively low. In my opinion, the consequences of delaying the program to eliminate all the uncertainty are more detrimental than proceeding as rapidly as possible and accepting a degree of risk.

Question. Critics of the road mobile system have suggested that with the technologies of the 1990s, the Soviet Union could fix the location of the missile sufficiently to barrage it, what do you think about that?

Answer. Even without speculating on this possibility there are enough other current liabilities to the road mobile system to exclude it as a viable alternative to other basing modes.

Question. General Ellis, it may not be too much to say that the concept of the "Window of Vulnerability" and of the "Strategic Bathtub" grows out of your analysis at SAC in which you compared planned force levels and capabilities with those which existed in 1977. I recognize that much of this information is classified and will have to be dealt with in closed session, however, I would like to hear in open session, if possible, your thoughts on trends in the military balance.

Answer. The analysis you described includes an IOC of 1986 for the MX. The Carter program had not pinned down the ATB IOC at the time of the administration's departure, but it was in the program.

The ALCM program was underway and two Trident submarines every three years were scheduled.

Those improvements, in addition to the MX coming on line in the latter part of this decade steadily improved the balance, but [deleted].

That is the reason we recommended the interim bomber. The interim bomber got us back to the 1977 level of equivalence in the [deleted] time period in the fully generated mode and the [deleted] time period for the day-to-day alert case.

The Carter program did not include an interim bomber. That was the big step that the Congress made in the summer of 1980 when they added $300 million in the budget and asked the Pentagon to come up with their recommendations this March on a new bomber.

The Reagan program has slipped the IOC of the MX to a date that is not at all firm, with the exception of those that we put in silos, and accelerated the phase out of the B-52Ds. Consequently, with the preliminary calculations I have seen, we will have a slight decline in the balance adverse to the United States beyond that which was in the Carter program.

With the B-1 and no MX, we would fall far short, in the alert case, of the late 1980's level of equivalence contained in the Carter program. I have not reviewed the specifics in any great detail, but it tracks with what has happened to the force structure.

Question. General Ellis, how would you have liked to have proceeded with the MX missile and what do you think of the President's plan for dividing both a near-term and some far-term options for basing the MX missile?

Answer. The MX missile, in my opinion, is our number one national priority. I would have preferred a decision employing a deceptive basing mode such as MPS. Given that the President's decision did not correspond to what I would recommend, I support putting MX in unhardened silos in the interim and moving our decision date on a final basing mode as far forward as possible.

Question. General, in your view, would the introduction of the B-1, with its speed and ability as a piloted aircraft to manuever as it penetrates, in response to threats, contribute significantly to the Soviet's difficulties in defending against both the B-1 and the ATB?

Answer [Deleted.] The difference of course is the B-1's speed and maneuverability, as well as ECM. [Deleted]. In my opinion, the B-1's capabilities as a manned penetrator [deleted] to the Soviet's problems in defending against both the B-1 and the ATB [deleted].

Question. The B-1 bomber can perform more missions than simply penetration of Soviet air defenses. Nevertheless, it is intended that it will serve as a penetrator for a period probably into the 1990s. To be an effective strategic penetrating bomber, the B-1 will have to rely on electronic countermeasures. Could you give us your views on the effectiveness of electronic countermeasures for strategic penetrating bombers.

Answers. Our studies that we ran over a year ago indicated that the B-1, or any interim bomber with the characteristics of interim bombers as we know them—with RCS of around [deleted]—would have great difficulty penetrating in the 1990s and beyond. ECM is basically an unknown at this time considering the radar cross section of the B-1. There have been some recent improvements in ECM ability to counter [deleted] but to my knowledge none of the improvements are proven. It is this uncertainty in ECM progress which dictates earliest possible development of the ATB.

Question. The President proposes to acquire six additional AWACS aircraft and additional F–15 fighters to improve the air defenses of the United States. How serious do you believe the Soviet bomber threat is to the United States and how do you believe we could best improve our defenses?

Answer. As with the C^3 situation, air defense has long been treated as a declining mission requirement. I believe the Soviet bomber threat *is* serious and we have eroded our air defense system past the point of vulnerability. The Air Force recently released an Air Defense Master Plan which details needs for Air Defense. Included are: Improvements to surveillance and warning systems, (for example, the Joint Surveillance System/Region Operations Control Center), and improved DEW-line and Over-the-Horizon Back Scatter Radar Systems. These will provide the surveillance and warning capability needed for air defense. Similarly, they will phase out the active F–106 fighter-interceptor squadrons and replace them with F–15s for air defense. In the ANG, they will phase out the F–106s in favor of F–16s. All of these efforts reflect a rebuilding of our long neglected air defense system.

Question. The Reagan administration's C^3 package is much larger than I believe had been anticipated in the recommendations of the Strategic Air Command. Could you give us your thoughts on the President's C^3 package?

Answer. The Reagan Administration's C^3 package, corrects this important but long over-looked area. For years, C^3 has taken a back seat to tactical and strategic weapons, partially because of extremely tight defense budgeting. The Reagan Administration has recognized this shortfall and is taking action to improve our C^3 capability across the spectrum: improved tactical warning (both for the ballistic missile and atmospheric threats) and survivability and endurability of our C^3 facilities and the forces they control. Without these developments in C^3, commensurate weapons developments lack effectiveness.

Question. General Ellis, could you give us your thoughts on the President's Strategic Bomber Modernization Plan?

Answer. The bomber plan is tied to the MX because they are both parts of the strategic posture. As you know, my position on this issue as CINCSAC was that we should pursue the MX in a deceptive basing mode, procure an interim bomber to help close the "window of vulnerability," and ardently pursue an ATB. I had proposed the stretched FB–111 as my choice for an interim bomber instead of the B–1 because of availability and fiscal realities. My fear was that we would not be able to afford the B–1 in combination with the two other systems.

In general, my thoughts on the President's bomber plan are consistent with my earlier position. There is a valid requirement for an interim bomber—in this case, the B–1 variant. The requirements for the MX and the ATB are also valid. However, given fiscal constraints, my priorities are the MX, the ATB, and the B–1 in that order. This is the same priority order I would have recommended if we were pursuing a modified FB–111 in lieu of a B–1 variant. The point is, if you have to start cutting for fiscal reasons, I would begin at the bottom of the list. And in my opinion, the MX and ATB IOC's have been slipped to pay for the B–1, which, although needed, is at the bottom of my three priorities.

[Whereupon, at 4 p.m., the hearing was concluded, subject to call of the Chair.]

STRATEGIC FORCES MODERNIZATION PROGRAMS

FRIDAY, NOVEMBER 13, 1981

U.S. SENATE,
SUBCOMMITTEE ON STRATEGIC AND
THEATER NUCLEAR FORCES,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

STRATEGIC WEAPONS PROGRAM

The subcommittee met in open session at 9:13 a.m., pursuant to notice, in room 212, Russell Senate Office Building, Senator John W. Warner (chairman) presiding.

Present: Senators Warner and Thurmond.

Staff present: Louis W. Arny, Michael B. Donley, Frank J. Gaffney, Ronald F. Lehman, E. George Riedel, Carl M. Smith, professional staff members; and Karen A. Love, staff assistant.

Also present: Robert Nichols, assistant to Senator Jackson; Frank Krebs, assistant to Senator Cannon; and Arnold Punaro, assistant to Senator Nunn.

OPENING STATEMENT BY SENATOR JOHN WARNER, CHAIRMAN

Senator WARNER. We will resume the meeting of the subcommittee on the strategic programs. We are pleased to have two nongovernmental witnesses this morning, Rear Adm. Gene R. La Rocque, Director of the Center for Defense Information, and Mr. Lee Carpenter of the IBM Corp., testifying as a private citizen.

Admiral La Rocque and I have had a professional acquaintance for well over a decade. While we have not always been on the same side of an issue, I certainly have a very healthy respect for your viewpoints and the professionalism you have exhibited in the past.

Mr. Carpenter, I have known you through the years also.

Our first inclusion in the hearing this morning is an editorial that appeared in today's Washington Post written by the former Secretary of Defense, Harold Brown.

[The information follows:]

[From the Washington Post, Nov. 13, 1981]

WRONG ON THE B1, WRONG ON THE MX

(By Harold Brown)

The Reagan administration announced on October 2 a package of decisions on strategic nuclear forces. The highlights of the package concerned the B1 bomber and the MX missile. I find unconvincing the arguments they made for their decisions and against what I considered the previous administration's better choices full steam ahead on air-launched cruise missiles and the Stealth bomber, leaving the B1 to rest in peace, and deployment of the MX in a multiple protective shelter mode.

Defense Secretary Caspar Weinberger has indicated that the B1 will be able to penetrate Soviet air defense until 1990—a year or two after deployment of the 100 B1s included in the Oct. 2 strategic programs. After that, he suggests, the B1 can effectively be used on a cruise missile carrier (for which it is grossly overdesigned and overpriced). Moreover, he judges that an advanced technology "Stealth" bomber, employing recently developed techniques to reduce the observability of the aircraft by Soviet air defenses, could reach its initial operational capability by 1989, three years after that of the B1.

STEALTH BOMBER

The Stealth bomber, because it is still in development, cannot be as certain to be operational on the schedule predicted as can the B1. But the B1 manufacturing capability does not extend very far below the prime contractor, and will have to be rebuilt—and the program now includes over $2 billion of B1 development funds. Moreover, there is a serious risk of diversion of funds from Stealth development and production into the B1, particularly once the B1 production line has begun and all the usual political pressure to keep it going has built up.

The B52 force may now not be modified to be able to preserve a reasonable penetration capability into the late 1980s, on the expectation that the B1 will serve that purpose. Moreover, the air-launched cruise missile force may be cut back in size. Both would be additional mistakes, made to finance the B1 decision.

The Soviet air defense system has been pointed toward defense against a B1-type threat for over a dozen years. We will lose assurance in the B52's ability to penetrate sometime after 1985, and in the B1's penetration capability about 1990. The B1 will have to depend on electronic countermeasures (ECM) for its penetration, and this is a game of measure and countermeasure whose outcome is not confidently predictable.

The Soviets have been making an investment that will amount to over $100 billion (double that, counting operating expenses over a decade) in this kind of defense system by the time the B1 reaches its full operational capability. But the cruise missiles (to be launched from the B52) will require the Soviets to keep up and improve that type of air defense in the late 1980s and 1990s even if the B1 is not built. Indeed, these ALCMs will be able to penetrate the same defense with more confidence than will the B1. Against the Stealth bomber they will be totally ineffective; the Soviets will have to build a different system for target detection, tracking, identification and intercept, and at major added expense.

Thus, during the 1990s the Stealth bomber would have an extremely high confidence of being able to penetrate and strike strategic targets in the U.S.S.R.

WHY THE DECISION?

Why the decision? Given the administration's MX decision, *some* new weapons system may have been seen as politically needed in order to show action by the new administration to improve the strategic forces during the period of the late 1980s. The B1 decision may also be intended to mollify the Air Force (with blame for a re-cancellation, if it occurs, to fall on Congress rather than on the administration).

The 1977 Carter decision to cancel the B1 may then have been a close call. Since then, it has been proven correct. The air-launched cruise missile has proven out and will enter the force by 1983. The Stealth technology and its applications have advanced to the point where such a bomber can enter the force by 1989. Thus, there are now two alternatives for the air breathing portion of the strategic force that offer higher confidence than the B1 of being able to survive and penetrate Soviet air defenses.

The B1 decision is likely to waste $20 billion (or even $30 billion) if 100 aircraft are built or perhaps $15 billion or $20 billion if the production line is stopped at 50 aircraft, though 50 aircraft is not a useful bomber force. Such waste is a serious matter in light of fiscal constraints and other defense needs, conventional and strategic. But the MX decision, which implicitly concedes to the Soviets at least through the 1980s the advantage of having the only survivable land-based ICBM force, is a more fundamental one. Undoubtedly it proved most difficult for the Reagan administration to make, and may have the most far-reaching strategic consequences.

Moving to a dyad of strategic forces is conceivable: that is, relying on sub-launched ballistic missiles and bombers, abandoning the land-based intercontinental missile as an equal leg of the strategic triad, and dismantling it or allowing it to become a subsidiary capability that would not be expected to survive if attacked. That was considered by the Carter administration and rejected for the following reasons:

(1) It would in the end prove as expensive as maintaining a credible ICBM force, since the reduction of the strategic force to two components would require them to be more numerous and more survivable. Major increases in aid-launched and perhaps ground-based (intercontinental) cruise missiles would be needed; so would increased numbers of submarine-launched ballistic missiles (SLBMs), perhaps involving new submarine designs. And in the end, the Soviets would still be faced with an easier task in planning to destroy or defend against our strategic forces than would be the case with a full triad. We would be particularly vulnerable to a Soviet breakthrough in ability to locate submarines.

(2) Lacking the relative ease of communications to ICBMs, our SLBMs might well not be able to retaliate promptly, and could not respond as accurately on the U.S.S.R. or its forces. Air-breathing systems take many hours to reach intercontinental distances. These deficiencies could act to erode the deterrence.

(3) Abandonment of the land-based ICBM would signal a retreat in the face of a Soviet buildup of just those forces—a retirement from the competition, a major political-military defeat for the United States, and a very bad precedent, encouraging the Soviets to try to repeat the process in other technical/military areas.

The Oct. 2 decision fails to meet any of those objections.

It is useful to recall that the Reagan administration accepted from the beginning the view (which I share) that land-based ICBMs have especially valuable characteristics of precision, command and control, and quick response that are necessary for a part of the strategic force. Administration officials declared that they were determined to find an acceptable and survivable basing system—and that they knew that the multiple protective shelter basing mode proposed by the Air Force and adopted by the Carter administration was the wrong one.

The Oct. 2 decision adopts an admittedly very vulnerable basing system, and indicates an intention to continue to explore other possibilities for some time in the future—including at least one, the air-launched version of the MX, that was rejected after a lengthy consideration by the Ford and Carter administrations and also by the Reagan administration.

There is talk of further hardening of existing silos for a much-truncated MX force, but since the MX will not be available until 1986, that further hardening if it is at all feasible, will not be available before the Soviets can install a new generation of guidance systems. The Soviets, using technology that they have already developed, will surely be able by that time to improve the accuracy of their ICBMs further, so that in the case of a nuclear war the hardened MX silos will find themselves in the fireball and in the crater left by the nuclear explosion of Soviet warheads; the silos would not survive such an experience.

Other future possibilities for survivability listed by Secretary Weinberger include digging silos deep in the mountains or adding an anti-ballistic missle defense of fixed silos. The deep mountain approach is an old one and has never shown any signs of being workable, particularly as regards the problem of getting the missile out afterward, early enough to play any part in a strategic exchange. The air-launched system would be enormously expensive, and vulnerable to any attack that would threaten the bomber force—thus vitiating one purpose of maintaining a strategic triad.

CLOSE TO CANCELLATION

The effect of the Oct. 2. decisions on MX is to come as near as possible to cancelling the program without actually doing so. Though better than nothing, because it leaves open the possibility of a survivable basing mode later on, it abandons at least through the 1980s any possibility for a U.S. ICBM force able to survive even a very small Soviet attack and strike back in retaliation. The multiple protective shelter basing system was criticized on the grounds of its vulnerability to an attacking force of 9,200 Soviet one-megaton ICBM warheads, allowed in the absence of SALT II restrictions. The Reagan administration's deployment of 100 MXs can be destroyed by 200 such warheads. The difference of 9,000 is a very significant one.

In particular, it provides a major additional capability for a Soviet planner. A principal value of, and reason for maintaining, a survivable land-based ICBM is that in its absence a Soviet military planner, thinking about the possibilities of a strategic preemptive attack, could concentrate on the other components of U.S. strategic forces—bombers and submarines. The Soviet planner will now have 9,000 additional warheads to allocate to those ends in that planning. He will also want to work even harder on anti-submarine warfare capability, in the knowledge that has one less independent component of the U.S. strategic force to worry about.

I have some concern that the administration may be tempted in the future to go to a combination of ABM defense plus launch-under-attack as the basis for regaining some sort of public relations "survivability" for our ICBM force. Such a course would in my judgment be the most dangerous of all, both because of its implications for starting a war based on the decision of a computer, and because of the grave consequence of abandoning the ABM treaty, which is perhaps the most valuable specific achievement of the arms limitation process to date.

UNEVEN STRUGGLE

This could condemn the United States to a strategic arms competition, in which our side had thrown away not its restraints but some of the best ideas for improving our position in the competition. The resulting drain of resources and attention from the conventional arms needs of the United States, as well as from the non-military aspects of the U.S.-Soviet competition, could then be the most damaging effect of all.

Thus the major elements of the Oct. 2 decisions of the administration are at best a deferral of the difficult choices. What they suggest about the analytical process, the consideration of expert military opinion and diplomatic factors, the inability to override local political interests or to reconsider political statements augurs badly for the future. They contain the seeds of serious deficiencies in our future strategic posture. And by ignoring arms control considerations, they open the possibility of stimulating a further round of Soviet strategic arms deployments while the United States deploys rhetoric rather than effective strategic forces.

Admiral La Rocque, we will start off with you.

STATEMENT OF REAR ADM. GENE R. LA ROCQUE, U.S. NAVY (RET), DIRECTOR, CENTER FOR DEFENSE INFORMATION

Admiral **La Rocque.** Thank you, Mr. Chairman. It is a privilege to appear before your committee. Thank you very much for inviting me. Let me say at the outset that as time has passed since your distinguished service as Secretary of the Navy, I have come to appreciate more and more the wisdom of your work and the results of your efforts there and particularly your efforts in negotiating that agreement with the Soviet Union on our operations at sea.

Senator **Warner.** You are kind to say that. We are approaching the 10th anniversary this spring. Both sides have wanted to make it work and it has. It is a precedent that we should observe for future reference so that we can achieve an understanding and meaningful arrangement with the Soviets. I am certainly one to urge arms control now.

Admiral **La Rocque.** Yes, sir, I think it could be a model for many agencies of the Government, in fact our whole Government, as we set about to do it. I hope you will be able to push it from your position here in the Senate.

Senator **Warner.** I have articulated it many times and will continue to do so.

STRATEGIC WEAPONS PROGRAM

Admiral **La Rocque.** Mr. Chairman, President Reagan's strategic weapons program can be examined from four perspectives: its military effectiveness, its relationship to U.S. foreign policy, its contribution to our national security, and its domestic impact.

I believe significant questions can be raised about all these aspects.

From the point of view of military effectiveness, the new strategic proposals will have little impact on the combat effectiveness of the U.S. military.

In our foreign relations these proposals do not strengthen our alliances. I have just come back from Europe. I am convinced that these people are genuinely worried and are going to take some serious actions unless we take action to ameliorate the conditions that they see.

The new nuclear weapons will reduce rather than increase the security of the United States.

The domestic impact of the Reagan program is also negative. It will weaken civilian support for the military.

The Reagan strategic weapons programs are basically those of President Carter and provide not a single new weapon. They include several outmoded weapon systems thoroughly examined by previous administrations and discarded as of insufficient military effectiveness to be of use.

The Reagan administration appears to have psychologically declared war on the Soviet Union. If we are actually planning to fight—and try to win—a nuclear war with the Soviets, then President Reagan's program may make sense and should perhaps receive this committee's support.

But "winning" a nuclear war would mean the destruction of the United States, as well as the Soviet Union, as visible nations. At the present time we can explode about 12,000 nuclear weapons in the Soviet Union. This is sufficient to destroy the Soviet Union even if they strike first. If all the nuclear weapons the President has requested are built, we will be able to explode 20,000 nuclear weapons in the Soviet Union by 1990.

From the point of view of military effectiveness, the new strategic proposals are largely show with little substance. A great deal of money is to be spent to achieve little, if any, increase in our military capability.

In the first 9 months of this administration, strategic military capability has been dramatically reduced with the decommissioning of seven Polaris submarines from our strategic forces. That amounts to a nearly 20-percent reduction in ballistic missile submarines, our most important deterrent force.

The additional nuclear weapons proposed by the executive branch will have little substantive impact on the combat effectiveness of the U.S. military. They will have little or no relevance to the wars that we are likely to face over the next 20 years.

The impact on our foreign policy of many of these proposed new nuclear weapons and the vehicles to carry them serves to isolate us from our allies and even alienate some of them. I do not think that what we are seeing in Europe is anti-Americanism, neutralism or passivism. I see it from their point of view as purely survivalism.

Consequently, I think these new programs are not a positive step to enhance U.S. world influence. I must conclude that the new weapons are not a plus for the security of the United States.

WEAPONS PROGRAMS DOMINATE FOREIGN POLICY

Contrary to Secretary of Defense Weinberger's prior statement that his military proposals support our foreign policy, the military policies and weapons programs appear to dominate our foreign policy.

Opposition to the Reagan nuclear package, particularly in regard to nuclear plans and programs for war in Europe, has at best stirred latent hostility in Europe. There have been no supportive comments from any of our allies including those in the Pacific.

The Soviets have gained a propaganda advantage of speaking softly while carrying a big stick.

While it is our intention to take military moves and send signals which we hope will reassure our allies, in present strained circumstances we had better take special care that our foreign policy and our military policy are not in conflict.

Recent rather careless actions and remarks on nuclear war in Washington are producing nothing but problems for us. The inadvertent American stimulation of opposition to nuclear weapons and nuclear war reminds me of riots which occurred in Turkey when I took a carrier task group into Turkey in the mid-sixties.

We expected the people to put garlands in the streets and welcome us to Istanbul. Instead of that, they rioted. We found that the reaction of many Turks to our actions was much different than we had hoped for.

NEGATIVE IMPACT OF REAGAN NUCLEAR PROGRAM

The domestic impact of the Reagan nuclear program is also negative. It will cause us to make a conscious decision to reduce funds for health, housing, education, transportation and conserving resources for many of our citizens in order to buy new weapons. The cost of new weapons such as the new B-1, estimated at between $200 and $400 million per aircraft, or $7 billion to put MX missiles in silos is just too high and will weaken civilian support for the military in the long run.

I think we are going to have a backlash from our civilians in this country if we spend $400 million for one airplane. It is essential for any nation's security that the political, economic, social and military aspects of society be balanced and in harmony. If any component is excessively weakened, national security is jeopardized. If any component is enlarged at the expense of another, national security is weakened.

Clearly for the first time in the history of a great Nation, we are about to make a conscious decision to squeeze the American people to buy arms. For over 60 years the Soviets have chosen to deny their citizens adequate social programs in order to provide resources for weapons. We appear to be on the verge of sliding into the same abyss.

While becoming strong militarily, the Soviet Communist state is, according to President Reagan, on the verge of collapse. Surely we have no desire to emulate their example and buy excessive military forces at the expense of our people. In doing so we would diminish our national security in the long run while striving for a near-perfect national defense.

Spending some $260 billion on nuclear weapons and vehicles to carry them to the U.S.S.R. over the next few years will inevitably contribute to a public backlash against military spending. That is just the $260 billion for the nuclear weapons and the vehicles over the 5 or 6 years and that includes the $40 billion that the Department of Energy will be spending for nuclear weapons.

I think if we continue spending at this rate for the military, it will be very disruptive to the national functioning of our society. It will also make it much more difficult to improve our conventional defenses. We must move away from our unnecessary obsession with adding more nuclear weapons and concentrate on the real problems of our military.

I have appended the Center for Defense Information's more detailed assessment of the Reagan administration's strategic program, and I would request that it be included in the record.

Senator WARNER. Without objection the information will follow your testimony.

Admiral, what is your assessment of what the Soviets have done in the past decade with respect to their nuclear programs?

MIRROR IMAGE FORCES

Admiral LA ROCQUE. Mr. Chairman, both we and the Soviet Union have built the kind of forces that we felt were appropriate for each of us. We ought not be trying to, in my view, make a mirror image force of the Soviet Union. The Soviet Union has indeed increased its number of nuclear weapons and its vehicles to deliver them in the past several years.

But as of today, according to our Pentagon, we still have in our strategic forces alone, 9,200 nuclear weapons to deliver to the Soviets and they have 7,000 to deliver to us. Frankly, sir, I don't think it would make much difference if the numbers were reversed, in other words, if the Soviets had 9,000 and we had 7,000. Both sides can destroy each other in 30 minutes and there is nothing either side can do about it. There is no way to defend the United States and this administration is not suggesting or proposing any steps in that direction.

In fact, they are saying it is impossible to do so and there are no plans, according to Secretary Weinberger, to try to defend our cities. The only ballistic missile defense they are talking about is possibly for our missiles.

We must have as a minimum the number of nuclear weapons to destroy the Soviet Union even though they strike us first. Second, the Soviets must know that. That is where we are today.

COMPONENTS TO NUCLEAR SYSTEM

Senator WARNER. Let us pause there. There are three essential components to the nuclear system. It is the warhead, it is the accuracy, and it is the survivability, so to speak, of the launch platform. You used the example of the retirement of the submarines. They have reached their approximate hull life expectancy.

There have been some studies about extension of those hulls, but the consensus was that we should proceed with the new platform and that is the Trident. Are you supportive of that program and the phaseout of the Polaris?

Admiral **La Rocque.** Yes, sir, but it will be at least a year or 6 months before that Trident submarine with just 24 missiles will be on line to actually fire missiles.

Senator **Warner.** That is correct. That was a miscalculation for which many of us bear a measure of responsibility. I bear my portion of the responsibility for the delay.

What concerns me is that you use the figures, the 9,000 and 7,000, or whatever they are, in terms of warheads but we tend to overlook the other essentials, namely, the accuracy and the survivability of the launch platform.

MX MISSILE

That brings us to the MX missile. Do you think that is beginning to be vulnerable with the increased Soviet accuracy with the ICBM?

Admiral **La Rocque.** I think there is no question, Mr. Chairman, that the land-based missiles will be vulnerable by the mid-1980's with the Soviet SS–18's and other developments.

Senator **Warner.** Should we not be doing an upgrading of that?

Admiral **La Rocque.** We should be, in my opinion, Mr. Chairman, trying to find an invulnerable system but not build the one which we know at the outset is vulnerable. The idea that the President now has adopted of putting 100 MX missiles in existing Minutemen or Titan silos—they don't know which—makes no sense at all.

In the first place, we don't know how hard we can make the silo. We don't know how hard the silo should be and no matter how hard we make the silo, the Soviets can simply make bigger nuclear weapons to overpower the silo.

I, frankly, think that the administration adopted that 100 silo idea as a stopgap idea and they do not ever really intend to build the MX because it would not be any more survivable in the long run than the Minuteman or the Titan.

Senator **Warner.** Senator Tower and myself and others have been working with the administration and there hopefully will be a clarification coming shortly with respect to the incorporation of some of the deceptive basing modes in connection with the alternatives being studied between now and 1984.

Additionally, we hope to advance the 1984 date. I share some of your observations about the vulnerability of the proposal, as does Chairman Tower. We have made some progress in suggesting to the administration that that date be advanced, that also the deceptive concept be incorporated with the BMD alternative.

I return to your threshold analysis that we are proceeding in the wrong direction. If you were given the responsibility, in what direction would you proceed now, assuming both of us have the common goal of arms control and that for some reason is not achievable in the 1981–82 timeframe?

Admiral LA ROCQUE. The missile and the launcher because they are decommissioning any more Polaris submarines and proceed vigorously with the cruise missile. We are certainly in that era today. Hang them on planes, put them on ships, put them on submarines. I think we should stop funding the MX.

Senator WARNER. The missile or the launcher?

Admiral LA ROCQUE. The missile and the launcher because they are integrally related. If we can never find a way of launch it, there is no use going ahead building the missile, since it will not go into our submarines. Until we can find a way that we can make it invulnerable or less vulnerable, then we ought to not be spending the money on the missile.

I think we ought to stop funding for penetration bombers. The era of the penetration bomber began to decline when the Russians shot Gary Powers down in 1960 at 70,000 feet. We ought to be dealing with standoff weapons and not put any money in planned penetration strategic bombers.

If we are really worried right now, instead of having one-third of our bomber force on 5-minute alert, let us put 40 percent on the 5-minute alert, or whatever. We could even consider putting our carrier forces back into the SIOP as a primary vehicle.

As you remember, Mr. Chairman, we took the carriers out of the SIOP, I believe in 1968. If we really have a problem, let us utilize the resources we do have, put the carriers back in.

I think we ought to include in our calculations of strategic forces all of the nuclear weapons which can be exploded in the Soviet Union, because theater nuclear weapons now have such long ranges and are really beyond the idea of the tactical weapons. They, too, have become in a sense, as the Europeans call them, Eurostrategic weapons. Pershings and Cruise missiles in Europe will be able to reach the Soviet Union.

I think it is a whole new ball game now with the mix of theater and strategic weapons and I think we still are looking at it in an old-fashioned way, that some are strategic simply by definition and others are theater.

The end purpose of all of our weapons is to cause an explosion and destruction in the Soviet Union and make that so obvious that they will be very reluctant to attack us. Those are just some thoughts, sir.

Senator WARNER. Yes, sir. I appreciate them.

[The Center for Defense Information's detailed assessment of the Reagan administration's strategic program follows:]

THE CENTER FOR DEFENSE INFORMATION ASSESSMENT OF THE ADMINISTRATION'S STRATEGIC WEAPONS PROGRAMS—NOVEMBER 13. 1981

It is a privilege to appear before the Committee today and to have the opportunity to discuss the Administration's strategic program. The Center for Defense Information is a non-profit, non-partisan research organization which provides information and analyses on military issues to Congress, the media, and the general public. The Center supports a strong defense, but opposes excesses and waste in military spending and programs that increase the danger of nuclear war. CDI believes that strong social, economic, and political structures contribute equally to national security and are essential to the strength of our country.

The fundamental parts of the Administration's program announced October 2 are:

Production of 100 MX missiles, some of which will be placed in hardened Titan and/or Minuteman silos, while three other basing options are studied.

Proceeding with two long-range bombers, production of 100 B-1B aircraft and research and development for the Advanced Technology Bomber (the Stealth).

Proceeding with the Trident submarine program, accelerated development of the D-5 (Trident II) missile, and placing nuclear land attack missiles (SLCMs) on attack submarines.

Proceeding with several air defense programs.

Proceeding with a major upgrade of command and control systems.

For the first time the U.S. is attempting to achieve a nuclear war-fighting capability. The Center for Defense Information views the decision to create a nuclear war-fighting capability with great concern and welcomes this opportunity to share with you our analysis and conclusions on this critical policy.

Before directly addressing the implications for U.S. foreign policy and arms control, let me discuss several relevant issues.

The first has to do with the "window of vulnerability." Unfortunately, what began as an opinion about a hypothetical possibility has been accepted as a fact by the present Administration. But conflicting statements by various officials indicate some confusion about whether the "window" is already open or whether it will open in the future. The President's comments on October 2 after announcing his strategic program apparently broadened its significance to include conventional and naval forces as well.

Those who argue that there is such a "window of vulnerability" claim that the Soviet ICBM force has or soon will have the capability to knock out approximately 90 percent of our ICBM force in a first strike. There is no convincing evidence that such a capability exists or will exist in the near future.

Much analysis has recently been done on the merits of this argument, some of which was submitted to the Townes Commission this summer by Professor Edward Anderson of the University of Minnesota and Christopher Paine of the Federation of American Scientists, papers with which I hope you are familiar. We at the Center for Defense Information concur with their findings which demonstrate convincingly that the Soviets would not be able to knock out our ICBM force, much less the other two legs of our triad, a point rarely mentioned by proponents of the window of vulnerability theory. Even if the Soviets could knock out all of our ICBMs we could still retaliate with a larger force of alert bombers and SLBMs. The Soviets would also have to discount the possibility of a U.S. "Launch Under Attack" response, something far more feasible for the U.S. with its solid fuel Minuteman force than for the liquid fueled Soviet ICBMs. Other uncertainties about guidance, accuracy, "fratricide", coordination of attack, etc., should convince everyone but a madman that the success of a preemptive attack could not be assured.

On the vulnerability issue, the Reagan Administration has painted itself into a corner. With its decision to go forward with MX in fixed silos it has conceded that for the time being the vulnerability problem either does not exist or is insoluble. They have not adequately answered why placing them in what they view as vulnerable silos does anything to correct the situation. Proceeding with the MX missile in fixed silos can only be interpreted by the Soviets that the U.S. intends them to be first strike weapons.

As is becoming clear, nuclear weapons planning in the Reagan Administration is based on actually preparing to fight and prevail in a nuclear war. Two unsettling trends are now coming together. The first is a shift in our strategic doctrine away from deterrence and towards a nuclear war-fighting capability. This was codified in PD-59, signed by President Carter in August 1980 and adopted by President Reagan. This classified Presidential Directive apparently envisions several kinds of nuclear wars from limited exchanges through protracted conflicts to all-out exchanges.

The second trend has to do with the momentum generated by long research and development efforts that are now being transformed into deployable weapons systems. Advances in guidance, propulsion and accuracy enable this new generation of nuclear weapons to perform counterforce strikes against an enemy's strategic systems, including hardened missile launchers.

A primary justification of the Reagan program is said to be that it corrects a strategic imbalance between the U.S. and the U.S.S.R. Various Administration figures have claimed that we have been disarming during the 1970's while the Soviets have been arming. In actual fact we have both been continually arming and a rough strategic parity exists today between the U.S. and U.S.S.R.

While we may all agree that some improvements in U.S. strategic nuclear forces are desirable, the Reagan program is essentially an emergency, across-the-board effort that reflects excessive pessimism about present U.S. nuclear strengths. Secretary Weinberger overstated U.S. strategic inactivity since the mid-1960's. In fact, the U.S. has more than doubled its strategic nuclear weapons in this period, going from about 4500 in the mid-1960's to 9200 today. We have not been standing still! The Committee should focus on the extent to which the Reagan strategic program is driven by false assumptions of U.S. weakness. These alarmist assumptions were displayed for the world in the Defense Department's document Soviet Military Power which has been widely and correctly criticized for its one-sided presentation. By contrast, it is interesting to note that Secretary Haig recently expressed a more positive appraisal of U.S. strengths. Stated Secretary Haig:

"I'm not one that believes it is either right objectively or sound policy to inflate our concerns about our own weakness. . . . In a contemporary sense, the United States is very, very strong and very, very capable, especially in the strategic area. Our systems are both more sophisticated and reliable and more technologically sound." (Washington Post, September 11, 1981).

The massive new nuclear weapons program, coupled with programs already financed and under development, will result in 17,000 new U.S. nuclear weapons over the next decade. Approximately two-thirds of these will be new additions to the stockpile while one-third will replace present weapons. The Reagan Administration has not explained to the American people how adding 10,000 new nuclear weapons to the approximately 30,000 already in our stockpile enhances our security or national defense.

Nuclear weapons today serve only one legitimate purpose, to deter nuclear war. The only true test of the sufficiency of our nuclear systems is that they are able to meet any Soviet attack at a level which denies any possible expectation of gain. The present U.S. capability to deliver 12,000 nuclear weapons on the Soviet Union more than meets this test of sufficiency.

Secretary Weinberger says all the right things about U.S. pursuit of deterrence and stability but he seems to believe that threatening the survivability of Soviet strategic forces is the path to these objectives. He has stated that the ability to target Soviet missile silos is desirable because "if you have developed the ability to take out their missiles, you have achieved a degree of deterrence." (Washington Star, July 28, 1981). Other Administration figures seem to advocate aggressive plans. Richard DeLauer, Undersecretary of Defense for Research and Engineering, recently endorsed the Trident II missile because it would give the U.S. "preemptive capability" to attack Soviet forces such as missile silos. It is vital that the Committee question a number of Administration officials to draw out the true nature of their strategic nuclear concepts and plans because, in fact, we do not enhance strategic stability or deter the outbreak of nuclear war by putting Soviet forces on a hair-trigger.

With these points in mind, let us turn now to the foreign policy implications for our European allies, the Soviet Union and the Third World.

Developments in U.S. strategic forces and doctrine have been closely tied over the years with alliance considerations, particularly U.S. efforts to provide a nuclear umbrella for our NATO allies. It is primarily because of our alliance commitments that we plan options for the first use of nuclear weapons and feel driven to demonstrate both to friends and opponents that we would not be afraid to begin a nuclear war. It is a very demanding and costly endeavor to attempt to provide a nuclear umbrella for countries very distant from our shores. This subject deserves renewed attention and assessment. In view of the budget crunch in the U.S., it may be of interest to note that, according to the Defense Department, the U.S. will spend at least $105 billion in fiscal 1982 for NATO defenses, and that does not include any allocation of U.S. spending on strategic forces. Perhaps if the Europeans are deriving great benefits from our strategic force we should discuss with them how they might help defray the great costs of these programs and, in particular, help us pay for the new six-year nuclear buildup which will cost at least $180 billion, and probably much more.

As is evident, these decisions, coupled with the TNF modernization programs and the recent Reagan decision to go forward with neutron weapons, are putting a great strain on the relationship with our allies.

We need to do three things to alleviate this strain. First, make it clear that the final decision on TNF modernization will consider European concerns; second, take the initiative with positive, constructive arms control proposals; and third, emphasize and support needed improvements in NATO conventional forces as the true deterrent to conflict in Europe.

Rightly or wrongly the United States is perceived as driving the arms race forward to new and more dangerous levels. We should recognize that the recent outpourings of European concern about these issues come from a broad cross-section of the European population and not just a minority of radical elements as Secretary Weinberger asserts. Demonstrations alone will not, and should not, make policy in democratic nations but a strong possibility exists that they may have some effect.

Furthermore, the many intelligent, articulate people who are participating in the anti-nuclear movement are working within the parliamentary system and they may ultimately have a significant effect on the final position taken in several nations. Two NATO nations have recently elected Socialist governments and crucial elections lie ahead in others. If U.S. nuclear programs can be made a key election issue, we may find that the present and growing European perception that the U.S. is preparing to fight a nuclear war in Europe will tip the scales and bring in governments hostile to our programs.

CDI recently held a conference in The Netherlands on the topic of Nuclear War In Europe. We have listened and think we understand European assessments and statements of concern about the policies of the Reagan Administration. We would all do well to listen more carefully to European concerns, for a fragmented alliance will not contribute to our common security. It is accurate to state that the overall security of the United States will be better served by a strong, cohesive NATO alliance with the present nuclear forces in Europe as opposed to a modernized European TNF and a divided alliance.

Our relationship with the Soviet Union is in the worst shape in many years. The Reagan Administration has fundamentally altered the political atmosphere and embarked upon a new cold war. The new strategic program is a major element in the challenge to the U.S.S.R.

President Reagan and certain members of his Administration have a very simplistic view of the world in which we live and believe that all mischief originates in the Kremlin. This vision of Soviet leadership sees them as primarily concerned with expanding their power at the expense of others and out to control as much of the world as possible. Administration officials adopt a Churchillian pose and compare the 1980's to the 1930's, the Soviets to the Nazis and claim that our military buildup will stop their "adventurism". References to a "pre-war world" and threats that, "the Soviets must change their system or be involved in a war," add to the spirit of confrontation.

The Reagan Administration likes to remind us that the U.S. enjoyed an era of nuclear superiority during the period from the late 1940's to the mid-1960's. They insist that our clear superiority enhanced stability by discouraging Soviet "adventurism"—a luxury they say we no longer enjoy. Yet, a careful examination of the post-World War II world shows that the Soviet Union was quite willing to pursue its political objectives in spite of our overwhelming nuclear superiority. The Soviet Union was involved in numerous instances of military coercion and intervention during this period. The Berlin crisis of 1948–49, Russian intervention in Hungary and Poland in 1956, military threats against numerous other European countries and peripheral involvement in the Korean War all were Soviet provocations during an era of U.S. nuclear superiority.

The point to be made is that the link between nuclear superiority and the ability to implement national political objectives or determine political events is tenuous.

A more basic point we still do not seem to have learned, even after Vietnam, is that military answers to social, political and economic problems do not work. This is particularly true in the dangerous area of nuclear politics between the superpowers.

Secretary Weinberger expressed his view that the $180 billion strategic program will "strengthen our image in the Third World." Concern for the U.S. image has been frequently expressed in recent years by those who would rationalize the need for new nuclear weapons programs. The Committee should get the direct testimony of Third World people on this matter. There are reasons to think that people outside the U.S. may not put the same interpretation on our actions that we put on them. It is easy to delude ourselves about what other people think. Is the U.S. image around the world really enhanced by pushing forward rapidly with new nuclear weapons and at the same time refusing to ratify SALT II and showing great reluctance to enter into constructive arms control negotiations?

Finally, some observations concerning the implications of the strategic program in terms of U.S. arms control measures. There are some positive elements of the President's program in its implications for the future of arms control. Officials of the Administration have explicitly stated that we will continue to adhere to the provisions of the SALT agreements as long as the Russians show similar restraint. In this context, they have appeared to reaffirm support for the ABM Treaty, at least for now, though the active pursuit of advanced missile defense technology will continue to place strain on this, the most successful of all arms control agreements.

Unfortunately, there are also many negative effects. Fundamental to the Reagan nuclear program is the assumption that the path to real arms control and stability lies through a big buildup of U.S. nuclear forces in order to conduct negotiations from a position of strength. Obviously, strong U.S. forces must be maintained to permit successful negotiations. But there is no historical evidence to suggest that a single-minded "muscle flexing" will result in Soviet docility and force them to accede to our desires and preferences. The Soviets will certainly not allow us to achieve a "breakout" in nuclear forces. They have sacrificed a great deal to achieve rough equivalence in strategic nuclear forces and will continue to do so. The most likely Soviet response to our $180 billion program is one of their own, featuring new generations of nuclear weapons systems to match ours. The Soviet leadership will undoubtedly perceive our stepped-up efforts as a challenge to their security which must be met, and the escalatory spiral of the arms race will continue.

This strong probability is recognized, in principle, by the Administration in explaining the reason for not selecting the multiple protectve shelter basing mode for the MX missile. The President's statement argued: "The more shelters or holes we build, the more Soviet missiles will be built. They can build missiles as fast as we can build shelters, at about the same cost to both countries." This is a clear, logical explanation why we cannot gain by adding new ICBMs to our inventory and it applies with equal validity to many of the other proposed systems in the Administration's program.

Questions have been raised about the consequences for arms control of the introduction of cruise missiles, especially on submarines. But this issue of the approaching cruise missile "revolution" has yet to receive the attention that is demanded. Senator Mathias has perceptively pointed out during these hearings the analogy between the introduction of cruise missile technology in the 1980's and the advent of Multiple Independently Targetable Reentry Vehicles (MIRV) in the late 1960's.

MIRV, too, was a revolutionary development in strategic weaponry which promised a strategic advantage to the U.S. Unfortunately, the long-range implications were not adequately assessed until the pressure for development and deployment became dominant and it was too late. Long-term security problems were created in return for a short lived advantage in MIRV technology—and our present concerns about vulnerability are a direct result of this short-sightedness. The situation with respect to cruise missiles is similar to the MIRV dilemma in many ways. Here too, the pressure to exploit an existing technological advantage is great.

But, as in the case of MIRV, this advantage may well be short-lived. Though the Soviets presently lag behind us in the sophistication, guidance and accuracy of their cruise missiles, they do have a cruise missile program and have long deployed a number of cruise missile-carrying submarines, surface ships and aircraft with weapons designed primarily for anti-ship warfare. If they should follow our lead, as they often do, and opt to expand and improve their cruise missile capability, our security would be reduced rather than enhanced. The verification difficulties add a further unsettling dimension to the issue. Any new arms control negotiations will be complicated by the need to consider restrictions on cruise missiles.

The President has criticized the SALT II Treaty for exempting certain weapons systems from limitations or restrictions. He insists that everything will be on the table in future negotiations, including all elements of his five part package. In theory, this idea is commendable. In practice this has not worked very well.

There has been great reluctance on the part of the military and civilian leaders to "trade away" weapons systems once they reach advanced stages of development or are deployed. Instead, many weapons were kept exempt from the SALT II Treaty's provisions, apparently due to pressure from the armed services and the President's need to gain service support for the Treaty.

The new weapons systems of the President's package are far more likely to form the basis for an acceleration of the arms race, not bargaining chips at the negotiating table. Once new systems are under development on both sides they will become the floor, the minimum level, upon which each country will establish its negotiating posture and security requirements. This assessment is entirely consistent with the history of SALT I and II negotiations.

In summary, the Reagan Administration's effort to gain some measure of nuclear superiority is a dangerous and futile objective that must be reconsidered. The record of the arms race shows that each advance will be met by the other side, probably sooner than later, and that neither nation can gain a significant advantage.

Three issues discussed in this statement should be considered carefully in any reevaluation and restructuring of U.S. strategic programs.

First, the guiding principle of our strategic nuclear programs should be the preservation of deterrence, not the unconstrained pursuit of greater nuclear war-fighting capabilities. Nuclear weapons legitimately serve only one purpose, to deter war. Our present capability to deliver many thousands of nuclear weapons on the Soviet Union is more than sufficient for this task.

Second, foreign policy considerations must be an important element in the development of military objectives and programs. The Administration's strategic policies are a liability in our relationship with our NATO alles. We have strained the alliance further by pressuring our allies to accept new nuclear weapons and appearing to be insensitive to their concerns about nuclear war in Europe. Good relations and communication with our allies remain paramount. We cannot go it alone.

Third, arms control must be an integral component of our national security policy. Arms control agreements have in the past and must again in the future contribute their part to effective and coherent defensive strategies. Arms control issues should be considered in the formulation of strategic programs and the Administration should give the highest priority to the early resumption of negotiations.

Thank you, once again, Mr. Chairman, for the opportunity to testify here today, and I would now be happy to answer any questions you or any other members of the Committee might have.

CENTER FOR DEFENSE INFORMATION

1981—U.S. nuclear weapons delivered on Soviet Union

3—Polaris SSBN/Polaris SLBM [1]	144
6—Poseidon SSBN/Trident SLBM	672
25—Poseidon SSBN/Poseidon SLBM	3, 625
Total (on SLBM)	4, 441
550—Minuteman III times 3	1, 650
450—Minuteman II times 1	450
52—Titan II times 1	52
Total (on ICBM)	2, 152
347—B–52 (SRAM)	1, 140
60—FB–111 (bombs)	1, 500
Total (bomber weapons)	2, 640
Air Force and Navy tactical bombs [2]	2, 750
Total	11, 983

[1] Polaris A–3 SLBM MRV counted as three weapons.

[2] In Europe and Pacific within striking distance of Soviet Union.

1990 (estimate)—U.S. nuclear weapons delivered on Soviet Union

19—Poseidon SSBN/Poseidon SLBM	2,755
12—Poseidon SSBN/Trident SLBM	1,344
12—Trident SSBN/Trident SLBM	2,016
Trident I MIRV 7–10	(2,880)
Total	6,115
On SLBM	(6,979)
550—Minuteman III times 3	1,650
450—Minuteman II times 1	450
100—MX times 10	[1] 1,000
Total (on ICBM)	3,100
268—B-52G/H	3,000
60—FB-111	240
100—B-1B	2,500
Total (bomber weapons)	[2] 5,740
Air Force and Navy tactical bombs	[3] 2,750
Pershing II	108
GLCM	454
SLCM	650
SLCM [4]	(700)
Total	18,917
Grand total	19,831

[1] There could be more than 100 MX missiles.

[2] Assumes a mix of SRAM's, ALCM's and bombs for B-52G/H and B-1B.

[3] Assumes no additions of tactical bombs.

[4] Seventy-four attack submarines and 30 surface ships are scheduled to get SLCM's. Assumes 5 nuclear SLCM's per SSN and 10 for each surface ship.

Senator WARNER. Mr. Carpenter, thank you for joining us. You may proceed.

STATEMENT OF LEE CARPENTER

Mr. CARPENTER. Senator Warner, I would like to make a brief introductory statement.

This is my first public meeting on this subject. I am not generally known outside of DOD and although an IBM employee for many years, I do not represent IBM on this occasion.

I have been a voluntary consultant to DOD on strategic weapon systems for 30 years, including 4 years under Air Force invitational orders during 1973–80. For the past year I have worked as a private citizen with DOD, the intelligence community and the congressional staffs regarding the imminence of an overwhelming Soviet strategic threat and the need to completely revise MX basing in the continental United States.

U.S./U.S.S.R. STRATEGIC FORCES

My study, "Evolution and Capabilities of U.S. and U.S.S.R. strategic military forces, 1975–2000," has been evaluated and generally verified by seven major DOD commands and organizations. I have provided this report and/or briefing to the DOD transition teams, 27 DOD agencies, OJCS, NSC, the Townes Committee, several Congress-men and congressional staffs, Office of Technology Assessment, the Library of Congress, Arms Control and Disarmament Agency, and the State Department.

Considering the foregoing activity, my study represents a thoroughly tested, independent evaluation of the United States and Soviet Strategic Military Forces. The postulated Soviet threat was revalidated by Air Force Intelligence in April, 1981, and is currently being used as the basis for their long-range force structure planning studies.

CONCLUSION OF REPORT

In June, 1981, I formerly persented this report to the Senate Appropriations Joint Subcommittee for Defense and Installation. The principal unclassified conclusions of this study are as follows:

One, Soviet strategic military superiority is now well established and will obtain into the 1990's. This is verified in all traditional measurements and especially prompt countermilitary potential.

Two, the Soviet ICBM threat to the entire CONUS counterforce and countervalue target structure is imminent and overwhelming. The Soviets can now eliminate essentially all U.S. strategic military targets and all industrial urban targets in less than 1 hour. They need only use their online ICBM's and currently onstation SLBM's. This could be accomplished without committing their long-range aircraft.

Three, the United States cannot afford to prosecute a balanced counterforce attack and then execute a countervalue strategy against the U.S.S.R. under present policies and alert status. This aspect of PD-59 is meaningless for the next several years.

Four, the MX/MPS deployment scheme is futile and fundamentally inadequate. Position location uncertainty is immaterial. However, the MX, in a silo basing configuration, is vital to our future strategic force posture as a CONUS-based prompt CF weapon system—possibly collocated with MM and partially defended by safeguard.

Five, enduring survivability of CONUS ICBM's can only be achieved by a small road-mobile force.

Six, SALT II is uniformly disadvantageous to the United States and intrinsically inconsequential to either adversary.

Given the foregoing significant generalities, I have requested the privilege of testifying to your committee during current hearings on the balance and composition of U.S. and U.S.S.R. strategic forces. My prior independent analysis indicates that President Reagan's recent decision to discard the MX/MPS basing concept and base the MX in modified Titan II and Minuteman silos is astute, pragmatic and deserving of your further support.

I have prepared a 15-point memorandum, consistent with my classified analysis that I wish to submit to the committee in this public meeting. To save time, I will submit the memorandum and paraphrase the contents as follows:

MX BASING

Titan II and Minuteman silos will allow early MX deployment with the least new construction. Hardening should be limited to about

2,000 psi. More silos/shelters than MX missiles is wasteful. START must try to eliminate fixed-site ICBM's.

Improved C^3 is necessary to insure detection of any attack and timely response. Air defense is the lowest priority.

SEA-BASED DETERRENT

We must enlarge this force and include the limited counterforce capability afforded by the D-5 missiles.

We must have, as Admiral La Rocque indicated, a higher alert status for the next several years for our bomber forces and at-sea submarines and especially in the fall of the year.

We must make a determined approach to the achievement of parity at a rational and measured pace. They are so far ahead of us at the present time that we should go about this in a very systematic and nonprovocative manner.

The disruptive ABM defense of MM and MX is the only practical way to avoid breaking the ABM Treaty.

The small mobile ICBM which should be developed as the only economical means of achieving enduring CONUS survivability. The B-1 bomber is the most effective penetrating bomber we can confidently deploy as a major force element in the 1980's and possibly the 1990's as well.

This concludes my formal statement.

[The memorandum follows:]

OCTOBER 6, 1981.

Memorandum: Rationale for further support of President Reagan's program for renewal of U.S. Strategic Military Forces.

References:

(1) White House announcement of October 2, 1981.

(2) Testimony to the Senate Appropriations Subcommittee on Defense and Installations; June 18, 1981; L. C. Carpenter.

(3) Basing the MX missile; staff report of the Committee on Interior and Insular Affairs of the U.S. House of Representatives, August 1981.

President Reagan's recent decision to discard the MX MPS basing concept and base the MX in modified Titan II and Minuteman silos is astute, pragmatic and deserving of our further support. Related aspects of the President's program can also be justified from References 2 and 3.

MX BASING

1. The current and anticipated Soviet ICBM forces preclude the enduring survivability of our ICBMs in fixed sites in the CONUS—independent of the realizable hardness and/or numbers. Consequently, using modified Titan II and Minuteman silos will allow early MX deployment with the least new construction.

2. Since silo hardening is ultimately futile against a concerted Soviet ICBM attack, the existing silos should be hardened to preclude successful attacks by SLBMs and special weapon effects, such as EMP. Current Minuteman hardness (2,000 psi) is responsive to these criteria.

3. Because Soviet ICBM counterforce MIRVs can cover and destroy all current and foreseeable new construction, including MPS proliferation, building more shelters/silos than MX missiles is a waste of our resources.

4. We expect the new START initiative, for negotiation of real strategic arms reductions, to emphasize elimination of silo-based counterforce ICBMs due to the destabilizing effects of these force elements. Consequently, the less money spent on basing the less that will ultimately be wasted in the decade(s) of arming and disarming. Should START fail, the U.S. will eventually require more than 300 MX to achieve parity in prompt CMP.

5. Each aging, relatively inaccurate Titan II will be replaced by a 10–MIRV MX having 100 times the prompt CMP, thus eliminating an obsolescent ICBM and making a major contribution to our prompt CMP—our greatest current strategic military deficiency vis-a-vis the Soviet Union.

IMPROVED C^3

6. The President's newly announced plan for major C^3 improvements is a first-priority task needed to ensure the detection and timely response to a Soviet attack. This would provide the technical means to further ensure launching of the alert bomber force, launching of any threatened portion of our ICBM forces prior to destruction of the silos, and reliable communication with our missile-launching submarines for retaliatory attack against the Soviet industrial/urban targets.

CONUS VULNERABILITY

7. The "Window of Vulnerability" currently exists and will endure into the 1990s since the Soviets can now destroy all CONUS counterforce and countervalue targets in less than an hour. They will require only nominal ocean-based submarine-launched missiles. The massive ICBM attack will accomplish this task without the necessity to use their long range strategic aircraft.

AIR DEFENSE

8. Given (7) above, refurbishing the nation's air defenses with AWACs and F–15s is the least urgent of the tasks before us. However, these forces can be dual-mission, for partial, rapid deployment to areas requiring such defenses in time of stress; e.g., the Mid-East.

SEA-BASED DETERRENT

9. Further production of Trident SSBNs is vitally necessary to enhance our premier weapon system for enduring survivability. We need more sea-based missiles to ensure thorough coverage of the Soviet industrial/urban target structures, since we must assume that all SSBNs in port will be lost in the first hour of the attack. This could be half of our SSBNs.

10. The very accurate Trident D–5 missile will be an important new capability for the SSBN forces. Initially, these missiles can be assigned to less time-urgent hardened targets, such as Soviet nuclear weapon storage facilities. When C^3 and operational expectations are ascertained, the D–5 could be assigned to other hardened CF targets.

HIGHER ALERT STATUS

11. Since the "Window of Vulnerability" now obtains as noted in (7), and our non-alert bombers and submarines in port will be destroyed as noted in (6&9) we must place these forces on a higher alert status. (This is particularly true in all times of crisis and especially in the Fall season of each year for the next several years. Historically, the most serious Soviet aggressive initiatives occur in the Fall.)

MEASURED ACHIEVEMENT OF PARITY

12. We must use improved surveillance and warning systems, robust C^3 and higher alert status for our Triad bomber and submarine forces to deter the Soviets during our "Window of Vulnerability". This will permit us to proceed at the orderly, least expensive and least provocative pace proposed by the President. Since our forces cannot reestablish overall parity with the Soviet strategic Triad until the late 1980s, the improved C^3 and higher alert rates will ensure our deterrence in the especially dangerous interim years.

DISRUPTIVE ABM DEFENSE

13. The decision to base later MXs in Minuteman silos offers the potential for limited disruptive defense of the North Dakota missile fields with Safeguard. Although this defense will not be totally effective, the partial defense will impart uncertainty to the Soviets, reinforcing the desired deterrence. This defense would

not violate the terms of the existing ABM treaty, which should be sustained in the absence of SALT II and anticipating improbable near-term success with START.

SMALL MOBILE ICBM

14. The foregoing actions all permit time for the careful study of survivable ICBM basing options, or ideally, eventual elimination fixed-site ICBMs in the U.S. and U.S.S.R. through START negotiations. Since true mobility is the only means of prelaunch survivability for our Triad forces, we must also initiate development of a small ICBM for this purpose. A road-mobile option for near-term development could be configured from current hardware and several hundred deployed at one-tenth of the cost and in one-third of the time previously required for MX in MPS.

AIRCRAFT FORCES

15. The B-1 variant endorsed by the President has been developed at a cost of $4.0 billion during the past 20 years. Although the IOC has been delayed by 5 years due to the Carter Administration cancellation, this is still the most effective penetrating bomber we can confidently deploy as a major force element in the 1980s, and possibly, the 1990s as well. The airframe design allows space and payload for the subsystems needed for effective penetration of the Soviet air defense; e.g., advanced ECM and later, lethal defense.

If a superior Stealth aircraft is realized and deployed in the mid-1990s, the B-1 variant can function as a cruise missile carrier for many years thereafter.

L. C. CARPENTER.

Senator WARNER. Mr. Carpenter, I am anxious to have you elaborate on point 5 from your study, "enduring survivability of CONUS ICBM's can only be achieved by a small road-mobile force," and then any observations you might have, Admiral La Rocque, because that is going to be, I anticipate, a well-debated point on the floor of the Senate.

The principal criticisms that we have received of this approach thus far in these hearing is, one, the social interface problem; our society would not accept collocating of a nuclear deterrent force in various places without the necessity to have an arrangement for security.

Then the limitations of road mobile would require a smaller missile which, in turn, would limit the effectiveness of the weapon.

Then there is the question about the guidance. Those are three of the criticisms that have been directed at this concept.

Mr. CARPENTER. I understand that, sir. I believe that the DOD and the prior administrations, with the MX-MPS basing scheme, have been trying to solve a problem that is no longer soluble. Fifteen years ago that basing mechanism would have given us 10 years of force security. It is simply too late. It is no longer possible to base a large missile in the United States in any numbers or in any basing configuration that cannot be defeated by the Soviet Union in less than an hour.

Accordingly, the only way to achieve enduring prelaunch survivability of days, weeks, and months is by pure mobility. The United States has the largest and best highway system in the world. There are 11.5 million trucks in the highway system. We could put several hundred small mobile ICBM's into this system on a periodic basis.

I would suggest basing missiles on established military facilities and then rotating and exercising them on perhaps a 20- or 25-percent basis into the highway system.

The public interface problem is indeed real, but it is time that we syndicated the responsibility for the defense of the United States to all localities.

NO PLACE TO HIDE

Senator Warner, if there is a war, you and I will be dead in 7 minutes. Out in Nebraska they will be blind in 20 minutes and they will be dead in 30 minutes and their land will be useless for a century. There is no longer any place to hide.

If the Soviets attack us, you know 150 million of us will die. Consequently, where we put the missile becomes academic in the fundamental sense. There is no longer a safe place to hide in the continental United States. Accordingly, the movement of this ICBM in an unobtrusive and covert manner on the public highway system of primary and secondary roads is the only means by which this can be accomplished.

TARGETING

On your consideration of the problem of the targeting, perhaps in the command and control function this system should be used; as an enduring survivable reserve force just as we use the Polaris, Poseidon, and Trident missiles today. The small mobile ICBM should not be used for targets which require prompt destruction.

The missile could be used for both counterforce and countervalue targets but hours or days or months after the war begins. This would assure the Soviet Union that regardless of their initial success in the attack, we would obliterate all of their most important counterforce and countervalue targets and particularly their leadership.

Senator **Warner**. You think we could overcome the social interface problem?

Mr. **Carpenter**. I believe we could. President Lincoln said something to the effect that if the American public is fully informed, they will take the right action.

Senator **Warner**. Admiral?

Admiral **La Rocque**. Thank you, Mr. Chairman. I would like to start with just the thought that we have plenty of weapons now, plenty of nuclear weapons now to destroy the Soviet Union many times. If we continue on the programs we have, we will increase that number without even considering a small road mobile system, which I think is really ridiculous.

From the technical point of view, the MX missile weighs about 190,000 pounds, just the missile alone, no truck, nothing else. Our roads can only stand a maximum of 190,000 pounds today and that includes a very special permit and very special sets of wheels and all kinds of provisions.

You would have to go about building some additional roads. I think we will alienate our people.

MOBILE MISSILE

The problem in Europe has come about because we are trying to put a mobile system in Europe and the people in the United States are significantly no different than the Europeans are. That is what alerted the people in Europe to take the opposition they have taken to the introduction of missiles in Europe, the mobile missile.

That gets to the fundamental point that what we ought to be doing is removing missiles from the United States to reduce the interest of the Soviet Union in attacking the United States.

Senator WARNER. Including a corresponding reduction for the Soviets?

Admiral LA ROCQUE. We are concerned primarily, Mr. Chairman, with the preservation of the United States and we want to assure the Soviets that we can destroy them if they attack us first. What we are doing now, as was suggested this morning, we are moving into this counterforce or war fighting concept.

I think as a Nation we ought to go back to the deterrent theory, not try to fight and win a nuclear war but rather to assure the Soviets that if they drop one nuclear weapon on the United States, we are going to destroy them. That is what mutually assured deterrence is all about. That is the kind of weapons we ought to be building.

CANNOT WIN NUCLEAR WAR

But we ought not have the idea we can fight and win a war with the Soviets and the Soviets plan to do it. I do not think they are, but if they are, it makes no sense for us to follow down the path we can fight and win a nuclear war. We cannot.

It has been said this morning, once the war starts 150 million people will be dead. The purpose of our nuclear forces ought to be to deter war. As General Le May once said when I sat in with him at the Joint Chiefs of Staff, the day we have to use our nuclear weapons, their utility is gone.

The utility is to prevent a war, not fight a war. When you go to mobile systems and with the accuracy that we are trying to put into the MX, that is war fighting.

As you pointed out, Mr. Chairman, one of the problems with the mobile system is that it degrades the accuracy of our system to hit Soviet silos.

Senator WARNER. Essential to your theory is that we have a survivable force. How do we achieve that survivability?

Admiral LA ROCQUE. We have 5,000 nuclear weapons in our submarines today.

Senator WARNER. Do you know the percentage of those that are on station at any one time?

Admiral LA ROCQUE. Sixty percent of those, 3,000 nuclear weapons, are on station at any one time. We have another couple thousand in our aircraft carriers of which some of those may survive and carry to the Soviets. We have in Europe 300 aircraft with the capability of carrying nuclear weapons to the Soviet Union and nuclear weapons are there and available.

We have the bombers on a 5-minute alert. We could increase that if we felt that was necessary. But the bombers on 5-minute alert provide for another 800 nuclear weapons immediately available to drop on the Soviet Union.

So, when you add up the survivable forces, you are up to 5,000 or 6,000 nuclear weapons with today's forces. Then we go ahead with our cruise missiles in our submarines, ships, we will increase that number.

I think we should build survivable forces and get away from the idea of putting more nuclear weapons in the United States, at least until we can figure out how to make them survivable.

Senator WARNER. Gentlemen, both of you have provided valuable perspectives for this record which will be the principal source document when the debate starts in the U.S. Senate. I want to thank you for taking your time to fulfill what you believe is a very deep patriotic duty. I think you have done very well.

[Whereupon the subcommittee adjourned at 9:55 a.m.]

STRATEGIC FORCE MODERNIZATION PROGRAMS

FRIDAY, NOVEMBER 13, 1981

U.S. SENATE,
SUBCOMMITTEE ON STRATEGIC AND
THEATER NUCLEAR FORCES,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

BALLISTIC MISSILE DEFENSE

The subcommittee met in open session at 1:37 p.m., pursuant to notice, in room 212, Russell Senate Office Building, Senator William S. Cohen presiding.

Present: Senators Warner, Humphrey, and Cohen.

Staff present: Ronald F. Lehman, professional staff member; Francis J. Sullivan, minority staff director; E. George Riedel, professional staff member; and Karen A. Love, staff assistant.

Also present: Jim Dykstra, assistant to Senator Cohen; Paul Schreiber, assistant to Senator Denton; Robert Nichols, assistant to Senator Jackson; Frank Krebs, assistant to Senator Cannon; Greg Pallas, assistant to Senator Exon; and Peter Lennon, assistant to Senator Levin.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, PRESIDING

Senator COHEN. The subcommittee will come to order.

We are pleased to welcome Maj. Gen. Grayson D. Tate, program manager of the U.S. Army's ballistic missile defense program, once more before this subcommittee. His intimate knowledge of ballistic missile defense technology and the complexities of providing for the survivability of ICBM fields make General Tate a particularly important and valuable witness.

President Reagan has indicated his determination to pursue vigorously an assessment of the feasibility and utility of ballistic missile defense as a long-term solution to the problem of finding a survivable deployment scheme for the MX missile.

Of particular interest to us today is the question of how an antiballistic missile system might be optimized for this purpose. Specifically, the highly effective results that are believed possible through deceptive basing of offensive and defensive components of a BMD and ICBM system need to be explored.

General Tate, as is the committee practice in the interest of obtaining as full and comprehensive a record as possible for the use of our colleagues as the President's program is debated on the Senate floor, we will start in open session and proceed at an appropriate moment into closed session to consider classified aspects of your testimony.

General Tate, you may proceed.

STATEMENT OF MAJ. GEN. GRAYSON D. TATE, USA, PROGRAM MANAGER, BALLISTIC MISSILE DEFENSE PROGRAM, U.S. ARMY

General TATE. Senator, what I have planned this afternoon is a short presentation which will, in general, summarize the work that has been going on within the BMD program within the last several months, particularly since the second day of October when the President made the set of decisions on strategic force modernization.

Most of the material that I had planned to present will be classified. I have three short charts that are unclassified before I get into the classified session.

Senator COHEN. Why don't you proceed with those first. Then I will have several short questions to pose to you.

General TATE. Of course, the part of the program that is of most interest to most folks these days is what has happened as a result of the President's decisions.

PRESIDENT'S STRATEGIC WEAPON IMPROVEMENT PLAN

Improvements in C^3.
Modernize strategic bombers.
New SLBM's.
Improve ICBM's and reduce their vulnerability.
Improve BMD.

There are five parts to the President's decision, the last two of which involve the BMD program, concerning lessening the vulnerability of our deployed ICBM's and making improvements in strategic defense, of which BMD is an important part.

MX BASING PLAN

SHORT TERM

Deploy limited number of MX in Titan or Minuteman silos.
Deactivate all Titans ASAP.

LONG TERM

Pursue three promising long term options. Select one or more by 1984:
  Continuous airborne patrol aircraft (CPA).
  Deep underground basing (DUB).
  Ballistic missile defense (BMD).

The basic plan as laid out by the President was to deploy a limited number of MX's in silos, as you know, and then to proceed with the three long-term options shown on the bottom, one of the three being ballistic missile defense.

BALLISTIC MISSILE DEFENSE (BMD) IN THE REAGAN STRATEGIC PROGRAM

Accelerated R. & D. on terminal defense system:
  Based on low altitude defense (LoAD) system.
  For defense of silo-based ICBMs or other hard targets.
Continued R. & D. on an exoatmospheric overlay system:
  For use as an overlay to terminal defense for layered defense.
  For ICBM defense growth path.

For defense of other high value targets.
Continued advanced technology program:
  For technical upgrades and state-of-the-art improvements.
  For growth to an all nonnuclear warhead capability.
  For prevention of technological surprise.
  For investigation of space-based BMD.

Since the second of October, most of our efforts have been devoted to pursuing one of the three items highlighted on this slide. We are looking at an accelerated research and development program on terminal defense.

We have done some very significant research and development in recent years on terminal defense, and we believe that offers great promise for making our ICBM's more survivable. Much of this work is based on that which we have done in the last 2 years, in particular the effort on the low altitude defense system (LoADS), which is a system of relatively small components compared to those that have been the subject of research and development over the last 15 years.

The big emphasis is on silo-based ICBM's, although we are certainly keeping in mind other hardened targets that might need some protection from ballistic missiles, particularly C^3 sites and things of that nature.

We are planning to continue our research and development program on the exoatmospheric defense concept using long wave infrared optical sensors and using technology and techniques developed as a result of the research programs we have carried out since 1971. This technology of the overlay, making intercepts in the exoatmosphere, when used as an overlay to already deployed terminal defense, gives you a layered defense system with an upper and lower layer, which is a robust system. It does provide a very attractive growth path for the large Soviet threats which are projected a few years from now.

The exoatmospheric defense concept would be valuable for defending other high-value targets, including civilian industry. This technology program, funded at $120 to $130 million a year for the last 5 or 6 years, should continue because it does provide the technology to allow us to upgrade any initial BMD deployment, provide for state-of-the-art improvement and possibly growth to a nonnuclear capability in in the exoatmosphere.

By executing a continuing advanced technology program and understanding the technology in this country and comparing it with Soviet technology, we would certainly hope to avoid any kind of technological surprise by the Soviet Union.

The last item—we will continue to work with some of our own funds and to work with the Air Force and with DARPA on work related to space-based ballistic missile defense.

Senator COHEN. What major changes do you anticipate in the BMD program as a result of President Reagan's strategic modernization program?

General TATE. Senator, I would prefer to answer that question after we go into closed session, or for the record, if I might delay it.

[The information follows:]

BMD PROGRAM CHANGES IN THE STRATEGIC MODERNIZATION PROGRAM

General TATE. The Administration has recognized that any ground-based ICBM scheme will ultimately require BMD for survivability. Under the new strategic modernization plan the BMD R&D program will experience some conceptual changes due to the elimination by the Administration of the multiple protective shelter (MPS) basing scheme for the MX. The BMD program will be accelerated in order to support the option for a BMD deployment decision in 1984 and a [deleted]. Since December 1979, BMDO has been conducting a generic Low Altitude Defense (LoAD) Preprototype Demonstration (PPD) Program to demonstrate the technology for a LoAD System to defend land-based ICBMs deployed either in MPS or in fixed silos. Elimination of the MPS basing option for the MX also eliminated the significant leverage a LoAD system could derive from the deceptive nature of that basing scheme. Consequently, since the President's announcement, a great deal of effort has been spent reassessing, reorienting and reoptimizing the BMD program. We are reassessing the BMD program from the perspective of the announced strategic program to be sure the program is heading in the right direction both technologically and programmatically to provide the national decisionmakers with valid data on which to base their decision on whether BMD, or one of the other options (i.e., Deep Underground Basing (DUB); Continuous Patrol Aircraft (CPA)), should be selected in 1984 for deployment to enhance the survivability of MX over the long term. We are reorienting the program to concentrate on concepts and technologies which are applicable to the defense of ICBMs and which provide the required effectiveness levels to accomplish the mission. Since the administration intends to explore deceptive basing of ICBMs in silos as well as non-deceptive basing, both these options will be included in the BMD program. We are confident that BMD can provide the required survivability for these ICBM basing modes. The reoptimization of the program will emphasize what has to be done by 1984, on schedule and within cost, and will maintain the technology base efforts that will provide the BMD program with technologies with which to respond to future requirements (i.e., growth paths).

The BMD Organization has not yet completed all studies required to develop an optimized program to support the 1984 decision, the subsequent [deleted] and BMD growth options. However, in order to support the President's strategic modernization plan, the LoAD program will be restructured to capitalize on previous and ongoing programs to develop LoAD components (interceptor, radar, data processor) and related mature technology in order to define an optimized terminal BMD system. The present assessments will assure that we take advantage of this previous effort and the momentum already generated. These actions will allow us to respond quickly to the new guidance in the President's modernization program. Consequently, LoAD system and subsystem design and development will require a rapid ramp-up in fiscal year 1982 and demand high front-end funding. The Army's TOA has been increased by OSD to accommodate the increased funding required for BMD in fiscal years 1982, 1983 and 1984.

The 1984 decision date and the related [deleted] objective require about a [deleted] acceleration from the old LoAD Preprototype Demonstration program (PPD) associated with the MPS option. Therefore, the development schedules for the major subsystems will proceed at a significantly increased level of intensity. There are activities which were required under the MPS option such as parallel MX and LoAD design, interface configuration control, and development of the defense unit platform that are no longer required. However, under the silo defense option the specific system development issues that have to be addressed include operation in a nuclear environment, deceptive basing, defense engagement performance, development and deployment schedules, system cost, environmental impact, organizational and operational concepts, and arms control implications.

While deployment of LoAD will significantly increase the survivability of the land-based ICBM force, reliance on a fixed ICBM basing mode renews the need to provide for growth paths to counter continued build-up of the Soviet threat. Therefore, in addition to the LoAD effort, work will continue on an exoatmospheric Overlay program and on technology for endoatmospheric nonnuclear kill (ENNK) system. Whereas LoAD is based on technology, most of which has been proven through prior BMD programs, the Overlay and ENNK technology is less mature and needs to be demonstrated in a systems context. The Overlay embodies a number of advanced techniques coming into maturity in the 1980s that, working together, provide the significant attributes of exoatmospheric nonnuclear kill. The Overlay concept definition within BMD has resulted from several key technology developments over the past decade. These include principally the development of long wavelength infrared (LWIR) optics for long-range exoatmospheric detection and tracking, advanced miniaturized data processing to handle large volumes of data, and homing and guidance techniques which permit the use of nonnuclear warheads. There are a number of obvious advantages which would accrue to the defense if a NNK capability were available. These include the following: greater public acceptance, ease of transport and deployment, no nuclear release requirement, no critical nuclear material limitation, no self-inflicted nuclear blackout, greater testing flexibility during R&D and deployment, and greater siting flexibility.

The Overlay, when combined with an endoatmospheric underlay such as LoAD provides the option for a robust two-tiered layered defense of fixed-based ICBMs and other high value strategic targets. A layered defense system would offer a U.S. response to an unconstrained growth of Soviet reentry vehicles in the 1990s. The cost-effectiveness of layered defense is made possible by the use of nonnuclear kill vehicles on Overlay interceptor missiles, the low leakage achievable with two tiers of defense, the reduction in the required numbers of Underlay radars and interceptors, and the use of sophisticated adaptive preferential defense schemes which are possible because the Overlay sensors are able to "see" the entire attack early and predict the aimpoints of the RVs. Full knowledge of the threat makes it possible to optimize the use of defense resources and to preferentially defend targets. The pacing system for the layered defense is the Overlay which currently does not have a funded program to reach a deployment capability.

Finally, in order to build for the future, the BMD program will continue a broadly based advanced technology R&D effort. This effort will exploit new and emerging technologies in order to improve the cost-effectiveness and attractiveness of BMD systems, to guard against technological surprise by the Soviets, and to mature the technology associated with future system concepts, such as space-based BMD.

In summary, the BMD program seeks a balance between two major objectives: first, the preservation of cost-effective defense options which can be developed and deployed rapidly to meet near-term objectives and which have low development risk, and secondly, the maturation of advanced technology systems concepts which can cost-effectively counter projected Soviet threat growth. Based on current planning and funding, the BMD program will pursue both of these objectives. BMD system development efforts will be focused on an accelerated terminal defense system and the Overlay program. The acceleration of R&D in the endoatmospheric program will provide by fiscal year 1984 a high confidence option for an early BMD deployment. The Overlay program will continue the demonstration and validation of key technology issues in order to provide the essential technology base for possible program acceleration.

Senator COHEN. Can you explain for us the advantages of a deceptive basing mode from a BMD point of view?

General TATE. The advantage is that deceptive basing provides some leverage to a ballistic missile defense system that is not otherwise available because you have multiple aim points which can be defended in a preferential manner. It does provide leverage and makes the defense more effective under certain conditions.

SOFAS

Senator COHEN. Could you describe the survivable optical forward acquisition system (SOFAS) and tell us how important this technology is?

General TATE. That is an application of some of the technology that was developed in our advanced technology program using long-range infrared optical sensors. I will be pleased to go into that with some detailed description, but I would prefer to do that in closed session, because it is classified information.

Senator COHEN. Have you read the Townes Panel report and seen the Science Board's study on the ballistic missile defense?

General Tate. No, sir; I have not. The Townes Panel report has not been made available to me.

Senator Cohen. What about the Science Board's study?

General Tate. I have not seen the final report, Senator. I was a member of the Ballistic Missile Defense Panel which was one of the panels of the Science Board study which was conducted on the west coast. I saw an early draft but I have not seen the final report.

Senator Cohen. General, how effective would the LoAD system be as a stand-alone defense of a silo-based MX?

General Tate. Might I answer that question in closed session?

[The information follows:]

LOAD EFFECTIVENESS

General Tate. The LoAD system would be very effective in defending silo-based MX. For example, consider a deployment concept consisting of [deleted] radars deployed in defense of silos containing a [deleted] ICBMs. This deployment would require a Soviet attack "price" of [deleted] RVs to reduce the survivors to the [deleted] US RVs). Another deployment option would be to [deleted.]

This option would require an attack price of [deleted] Soviet RVs.

Senator Cohen. What CEP would the Soviets need to destroy a 2,000-psi silo with, say, a 500-KT reentry vehicle?

General Tate. I don't have the precise number on the accuracy requirement, Senator. That is not information that I normally would have.

Senator Cohen. Would you have any access to that?

General Tate Yes, sir. I can provide that for the record.

Senator Cohen. Could you provide it not only for 2,000 psi but also for 5,000 psi?

General Tate. That is for a half megaton?

Senator Cohen. Yes.

General Tate. Yes, sir.

[The information follows:]

REQUIRED CEP

The Soviets would need a CEP of about 130–150 meters to achieve a high kill probability. (P_k=.95 to .98) against a 2000 psi silo with a 500 KT warhead. If the hardness is increased to 5,000 psi, the CEP required to achieve a comparable kill probability would be 100–120 meters.

Senator Cohen. To what exent, in your judgment, would the superhardening of the silos enhance the ability to be defended by an ABM or BMD program?

General Tate. Senator, with the accuracy of the Soviet ICBM's that we have observed, it would obviously be desirable to have hardened silos, but I have not been privy to recent information on specific hardness factors vis-a-vis yields and miss distances.

I think that I should not address that, sir in an open session.

Senator Cohen. I just recalled that Secretary Weinberger did, in fact, release a study done for mass distribution. As I recall, in the course of that study it did indicate that known, existing silos were not effective against Soviet RV's. It did not address what level of hardening was involved, but the document also contained the statement that expected progress by the Soviets in the future would make hardened silos even more vulnerable.

I wonder if you have had a chance to read that Defense Department document?

General TATE. Yes, sir, I have read that document. There is no question that a silo which has been hardened by several thousand psi can take a hit closer than one that has not. It is a matter of degree. One thing that it is proper to say is that hardening of silos does tend to discourage the fractionation by the Soviet Union of their MIRV'd vehicles. Hardened silos are harder to destroy, so the Soviets may be less inclined to fractionate with very large numbers of smaller RV's.

Senator COHEN. It would seem to me the opposite might be true, that if you had a hardened silo, that the Soviets would be encouraged to put two or three RV's per hardened silo, it would encourage them to fractionate. They have so many numbers. In any event, since we have been told that an SS-18 does carry a minimum of 10 warheads now, with ability to go to 30 warheads per individual missile, does that imply hardening the silos would invite a fractionation, putting two or three or four missiles per silo?

General TATE. That certainly would be an option available to them either to use one or two large weapons or several smaller ones, and take their chances on probability of a direct hit or a nearby hit.

Senator COHEN. When do you think we will be able to deploy an effective space-based laser system to intercept Soviet ICBM's?

General TATE. The studies that we have participated in on that, Senator, indicate that it is still quite a few years into the future. It does not appear to be the kind of thing that will be available in this decade, for example.

Senator COHEN. Is that true whether or not you would advance or more fully fund the program? In other words, can you accelerate that by simply adding money to it?

General TATE. I think any program can be accelerated somewhat with more money; however, some of the technologies that are required to have a fully effective space-based laser system such as pointing and tracking accuracy, the power, the ability to make large mirrors and all of those things, are being worked, perhaps not at the best funding level, but they are being worked.

I think there is certainly a point of diminishing returns on the amount of money and how fast you can push that technology along. It is a very complicated device, putting together a number of new technologies, and that is going to take a few years to mature.

Senator COHEN. What are your plans for the exoatmospheric intercept program in 1984?

General TATE. As I indicated on one of the charts I showed, Senator, we plan to continue work on our exo program. That program is at the present somewhat underfunded. We like to say it is below the threshold we would like to see, but it is providing us some very interesting results by means of data collected by sensors that we have fired in the last 2 years or so at Kwajalein Missile Range.

We will be firing some other experiments out there over the next 2 years. At the moment, however, we do not have sufficient funds to do all the systems engineering to demonstrate all of that technology tied together in a fully integrated package. But it does offer great promise if we can demonstrate that technology, because it offers the opportunity to engage reentry vehicles at longer range, increase our battle space and have layered defense systems that have significantly smaller leakage than is possible with a single-layer terminal system.

Senator COHEN. When do you think you can employ a layered defense for MX's based in silos?

General TATE. Assuming we had the optimum funding levels to pursue all the things that we need to pursue, we believe it would be possible to have a layered defense system in place at some time in the future.

Senator COHEN. You are saying, assuming you have more money. Assuming you have the money currently projected, what is the schedule?

General TATE. We currently do not have an operational date for that, Senator; the funding is just below threshold to get there.

Senator COHEN. Is it fair to say it will be sometime later than you indicated with accelerated funding, increased funding?

General TATE. Yes.

Senator COHEN. Senator Humphrey, do you have any questions?

Senator HUMPHREY. Not in open session.

Senator COHEN. If there are no further questions, the committee will now go into executive session.

[Whereupon, at 1:53 p.m., the subcommittee proceeded in executive session.]

EXECUTIVE SESSION

Senator WARNER. General Tate, why don't we proceed now with your testimony.

General TATE. Senator, I would like to talk a little bit more about the changes that we think are coming about in our terminal defense plans as a result of the Reagan strategic program that was announced in October.

CHANGES IN TERMINAL BMD UNDER THE REAGAN STRATEGIC PROGRAM

PROGRAM PACE

Accelerated R. & D. fiscal year 1982–84.
  1984 deployment decision date.
  Early IOC.

First, just to say a couple of words about program pace, I mentioned in one of the earlier slides that we are thinking in terms of an accelerated research and development program for ballistic missile defense, BMD. The program we have been following for the last 2 years, the low altitude defense system, LoADS, was a preprototype demonstration program with no plans at the time for deployment.

If a decision is made in 1984 to deploy a terminal defense system, obviously we are going to need a great deal of information by 1984 for that decision to be made. We are looking at a research and development program considerably accelerated during the next 3 years, looking toward the 1984 possibility of a deployment decision.

Another thing that goes with that and affects our planning to a considerable degree is an early initial operational capability, IOC, date. That is, assuming that the decision were made in 1984, we are thinking in terms of an initial operational capability date by the end of [deleted].

CHANGES IN TERMINAL DEFENSE BMD UNDER THE REAGAN STRATEGIC PROGRAM

PROGRAM PACE

- ACCELERATED R&D FY82 - 84
- 1984 DEPLOYMENT DECISION DATE
- EARLY IOC

TECHNICAL DESIGN DRIVERS

ICBM DECEPTIVE BASING (MPS)	COMMON	SILO ICBM BASING
• PRESERVATION OF LOCATION UNCERTAINTY (PLU)	• SMALL RADAR DESIGN	• MOBILE RADARS
	• HIGH PERFORMANCE INTERCEPTOR	• TRANSPORT VEHICLES
• DEFENSE UNIT PLATFORM	• NUCLEAR HARDNESS	• COMMAND, CONTROL & COMMUNICATIONS (C³)
• BREAKOUT TECHNOLOGY	• DISTRIBUTED DATA PROCESSING	
	• MAINTENANCE OF DECEPTION	

I have listed here some of the technical design drivers. I have listed them in three columns for a specific reason: These items listed in the center column are technologies which we are pursuing now which are the same as that which we were pursuing over the last 1½ years or so with the low altitude defense system, LoADS. We are looking to a small radar that can be [deleted] if we desire it to be; and a small, high-performance interceptor, probably single stage, with a nuclear warhead. We are looking for a system that is hardened to the nuclear environment in which it will have to operate, with a distributed data processing system. Assuming we may use some sort of deception in the basing of the BMD system, we need to understand all the factors involved in maintaining that deception.

Now, the items on the left are items that we were pursuing with regard to the old multiple protective shelter system, MPS, with MX. You will recognize some terms there, PLU, the defense unit platform—that is is the platform on which the missile, radar, and data processor were slid into the shelter, and breakout technology for breaking out through the roof of that shelter, which is 2 or 3 feet of reinforced concrete—we are no longer doing that technology and our contractors have been told to cease work on those technologies pertaining to MPS.

On the other hand (chart deleted), we are now picking up new work listed in the column on your right. We are looking at concepts involving [deleted] and the transport vehicles that would be necessary to transport [deleted] the missiles if we should deceptively base either the interceptor [deleted]. Keep in mind that we can obtain deception either through hiding and occasional movement, or through mobile components.

DECEPTIVE BASING

Senator **Warner**. When you say "deceptive basing" exactly what do you mean?

General TATE. Deception can be gained in two ways, either by hiding something and keeping its location secret and moving it occasionally or——

Senator WARNER. How would you move it?

General TATE. We are talking about small interceptors that are about 17 feet long. You would lower it into a silo in such a way that it would not be known whether it was an interceptor or a simulator. Occasionally, we would take it out and move it to another silo.

Senator WARNER. We are talking about ICBM basing?

General TATE. No, sir. Here I am talking about the BMD components, deception of the BMD components.

Senator WARNER. When we talk in this committee about deceptive basing, and we refer to it in the context of MX, is that in the left-hand chart that we have been talking about over there? Am I incorrect?

General TATE. This is what is peculiar to MPS.

Senator WARNER. You scratched that out because it is dead?

General TATE. Yes, sir. Work that is peculiar to MPS.

Senator WARNER. It is dead?

General TATE. Yes.

Senator WARNER. Now, you come to this committee and say we are prepared to fund the MX-associated work provided the administration keeps open an option for deceptive basing?

General TATE. Yes, sir.

Senator WARNER. What does that mean?

General TATE. Deceptive basing and MPS are not necessarily the same thing. MPS is a form of deceptive basing, a very peculiar form that was specifically defined.

Senator WARNER. What I am getting confused about is that when you are talking about deceptive basing, you are talking about BMD——

General TATE. Yes.

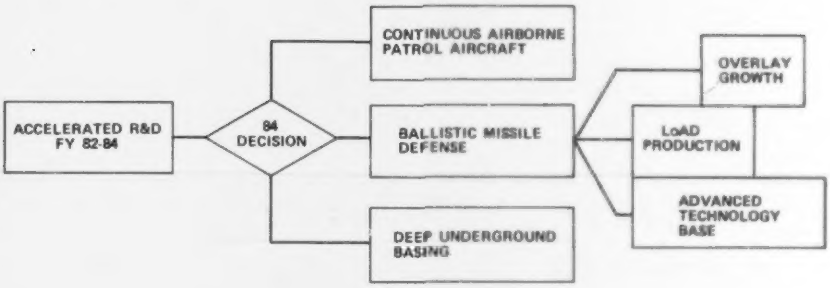
Senator WARNER [continuing]. Not ICBM deceptive basing whatsoever.

General TATE. It is possible to have deceptive basing for either or both the offensive and defensive weapons. The comments on the right-hand side are strictly for the defensive components.

Senator WARNER. The difficulty I have is that on the one hand I don't think this committee is talking about the defensive capability in terms of its deceptive basing as much as it is the offensive capability of deceptive basing. We are really talking about two different things in this committee and the administration. When this committee makes a recommendation, as it has, to continue funding the MX provided the administration keeps open the deceptive basing mode, it is not talking about BMD; it is talking about ICBM's. There, I suppose, is the problem. You may continue.

General TATE. We also have started some new work in the area of command, control, and communications [C^3] because it would be different for a system which is primarily oriented to fixed silos as compared to a system using mobile components.

BMD UNDER THE REAGAN
STRATEGIC PROGRAM



"ANY GROUND-BASED SCHEME ULTIMATELY WOULD REQUIRE
A BALLISTIC MISSILE DEFENSE FOR SURVIVABILITY"

Another way to look at this in a little more pictorial way is to consider this problem in the next 3 years, looking to a 1984 decision with three options for the long-term basing of MX. Some of the ways we might choose to use BMD components would be in some sort of terminal system, perhaps something that would use components similar to the LoAD components we have been working on in the last couple of years; with an eventual growth option to a layered defense system; and maintain our advanced technology base at the same time.

Senator WARNER. General, if you would eliminate the top box, continuous airborne patrol aircraft, would that simplify the problem for you more?

General TATE. I don't think it would make much difference to defense, sir. There has not been a great deal of talk about defending the continuous airborne patrol aircraft.

Senator WARNER. That is why I am wondering, if you put more assets in the ballistic missile defense and deep underground basing, whether you would get better return for the dollar, because, frankly, I don't think there is any support on the Hill for the continuous airborne patrol aircraft. I am wondering whether or not you are using resources in the most cost effective way?

General TATE. We have no money in the BMD program that I am aware of that relates to specifically defending the continuous airborne patrol aircraft.

TYPES OF BMD SYSTEMS

I would like to go back just a moment in history, if I could, Senator, and talk about the types of BMD systems that are possible.

Looking at baseline terminal defense [chart deleted], we have worked over the last several years on a system called site defense. It involves stationary radars and stationary interceptors, that is, nonmobile. The radar and data-processing systems were demonstrated at Kwajalein Missile Range. We built this radar and data processor and tested it against 50 ICBM shots fired from Vandenberg Air Force Base. It was a large S-band radar; it had the capability of searching up to [deleted].

We demonstrated this technology. We have confidence that we know how to handle that kind of technology.

[Chart deleted.]

Now, we have applied that technology and other work that we have done toward what we call low altitude defense system [LoADS] which is a form of advanced terminal defense. We have used those techniques plus microelectronics and the like to come up with a much smaller radar. This is a radar that has a face about 6 feet in aperture as compared to approximately 13 feet for site defense.

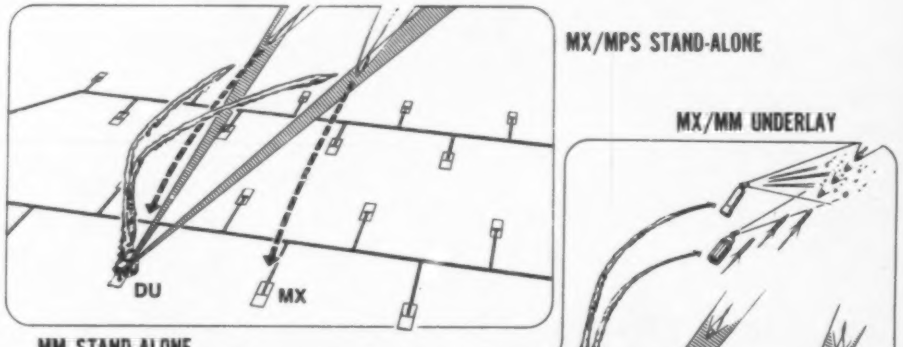
Instead of using a two-stage interceptor, it uses a small single-stage interceptor with a small nuclear warhead. It uses distributive data processing which is the latest technique in data processing, allowing us to use microprocessor technology that has been developed in the last few years.

Because these components are small, they can be packaged [deleted]. It was these components that we had planned to use in the old MX/MPS defense. Those components, packaged in a different way, have the capability of also providing defense for fixed silos. I will talk a little bit more about that.

Because this is a smaller, lower powered radar, it does not reach out as far as "site defense" did, and as you can see, it will conduct its intercept at much lower altitude. We are talking about an engagement time line of [deleted] an intercept occurring down in the vicinity of [deleted].

This system appears to have a capability to enforce leakages on the order of [deleted] percent. We have set a design objective to achieve less than [deleted]. The attributes, again, are small components, and confidence that the technology itself is a low-technical risk. We have demonstrated all these kinds of technologies. It is applicable for the defense of fixed silos.

LOW ALTITUDE DEFENSE APPLICATIONS



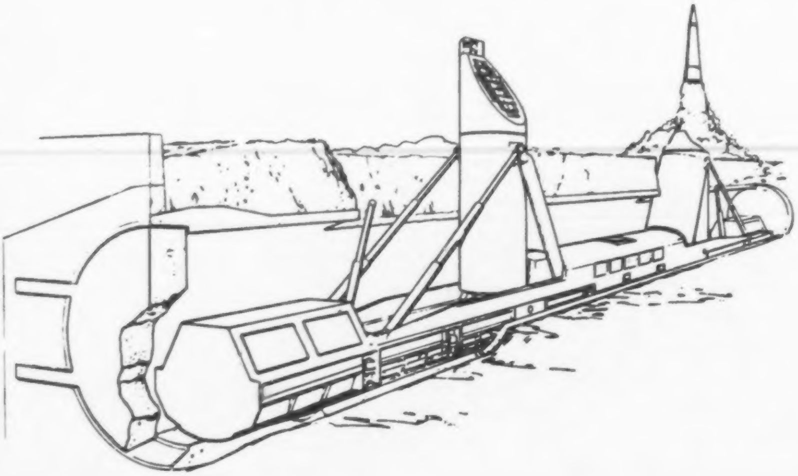
Over the last 2 years, the low altitude defense system preprototype demonstration program has been conducted as a generic system; that is, the concepts addressed the components—the missile, the data processor, and the radar—and packaged them in several different ways so that they could defend different kinds of targets. These included a deceptively based system such as MPS or fixed silo system with Minuteman or MX missiles. The same technology can be used for the lower layer of a two-tiered, layered defense system, with our exoatmospheric defense system concept as the upper layer.

Let me emphasize that over the last 18 months, because of the interest in the MX/MPS system, we have devoted the largest part of our effort to using this technology in defining systems for the defense of the MX/MPS system. That is now, of course, not being done any longer for MPS. It is X'd out.

[Chart deleted.]

We are concentrating at the moment on silo defense concepts using these types of components. We are going through a process of reoptimizing the system design to see if those components are adequate or acceptable for silo defense.

LoAD DEFENSE UNIT



This is, of course, a slide which you have seen before; the adaptation of LoAD to MPS. Again, a big X through that; we are not pursuing that anymore, but those components, this radar, data processor, and missile, are very capable components and may be quite sufficient for fixed silo defense.

[Chart deleted.]

Now, we are looking at a number of different concepts for fixed silo defense as well as for systems that could defend deceptively-based ICBM's.

Here you see an ICBM site containing an MX missile [chart deleted]. We have placed a number of small silos for the BMD interceptor. These silos would be filled with either a real interceptor or a simulator. We have used this deceptive basing in order to try to win back some of the leverage that we lost when MPS went away, because it was an advantage to have the leverage that you got from that deceptive basing of ICBM's.

To reemphasize, this assumes that this is a fixed silo deployment of MX.

Senator WARNER. How far away is it? It seems you would not gain any advantage by putting 10 silos filled with simulators near the MX itself.

General TATE. For example, in the case of MX we might have up to [deleted] for providing defense for MX.

Senator WARNER. My question was, does it make military sense to have it that close to the MX?

General TATE. Yes, sir. In fact, there is an advantage in having the missile at the point it is defending. For some kinds of attack you get much better performance from your interceptors. This deceptive basing of interceptors would be used in conjunction with the [deleted] to get this deception.

We are talking about having a [deleted]. It appears this would be quite an effective system. I will come back to some effectiveness curves on this later.

[Chart deleted.]

Also, we have done exoatmospheric work over a number of years using the long wave length infrared optics approach. This envisions placing these sensors up to altitudes of several hundred miles, with those optical devices looking out and picking up the incoming cloud of ICBM's, decoys, balloons, and whatever, at ranges of [deleted] processing that data onboard the missile, sending a minimum of information down to Earth so that we can launch interceptors and begin attriting the incoming reentry vehicles at ranges of [deleted].

With this kind of system, you gain a lot. You push out and get the first intercepts at rather long range.

Senator WARNER. Could you suspend about 10 minutes because there is a vote and we will be right back.

The committee will recess for about 10 minutes.

[Brief recess.]

Senator COHEN. General, why don't we begin. The chairman of the subcommittee will be here momentarily. In the meantime, you may proceed.

General TATE. I was talking about the exoatmospheric defense work we have been doing, which uses optical sensors to detect, discriminate, and track RV's, and optical homing guidance to kill an oncoming vehicle.

[Deleted.] We are in the midst of that and have had some encouraging tests; but we have not yet demonstrated all of the technology. It is a very versatile system and has the capability, because of the long reach of interceptors, of covering large areas and gives promise of nonnuclear kill which is an attractive feature. We will attempt a nonnuclear kill for the first time next summer.

I want to talk a little bit about effectiveness curves, and I will have a series of these charts.

[Charts deleted.] This shows an inventory of U.S. RV's, assuming that we have about 3,000 out in the field which would be the 2,000 now there with Minuteman plus 1,000 with MX. Assume you start from a base of 3,000 and have a large attack by the Soviet Union. If our ICBM's are undefended, the Soviets could very quickly draw us down to very low levels with about 2,000 Soviet RV's.

We can place a defense out there, and I am speaking of a terminal system using fixed interceptors as I have described and fixed [deleted] radars. That kind of system could enforce this kind of drawdown curve. It says that we could provide about [deleted].

For this kind of system, the cost would be $18 billion. This is site defense.

If we go to another kind of system, such as the one I have previously described, where we have deceptively based interceptors and [deleted] we can enforce a somewhat different curve and provide the [deleted] and we can do it at a price here of about $16 billion.

Senator COHEN. Where would that leave you in terms of missiles if you charged them [deleted] what would you be left with?

General TATE. That is [deleted]. That is using an interceptor inventory of about [deleted] small interceptors placed around the various ICBM sites.

So, if we go back and look at a summary of that information, then in the undefended ICBM case, a little over [deleted]. At the kinds of costs in the right column these different kinds of systems can charge this many RV's to take us down to a level of about [deleted].

Senator COHEN. The only question I have is, when you get down to the layered defense, are we talking about IOC dates sometimes in the [deleted]?

General TATE. We believe if the program were funded properly, sir, we can reach an IOC date in the [deleted] time period.

I want to point out that there are a number of ways to get additional survivors for larger attacks because we do see indications that the Soviets could end up with an unconstrained threat in the early 1990's in excess of [deleted] reentry vehicles. If that happens, of course, just a low-altitude terminal defense system such as I described would not provide a [deleted].

There are several ways to go. One would be to deploy a layered defense which would provide additional survivors by pushing your drawdown curve out somewhat further.

Another way would be to have a deceptive basing of your offensive missiles, as you discussed previously. That also, we believe, could increase your survivors by as much as 100 percent; in other words, provide [deleted] survivors out to threat levels about twice as large as that shown here, roughly [deleted] reentry vehicles.

Senator COHEN. How does that break down in terms of savings per RV using the deceptive basing of both the defensive missiles and the offensive missiles? How does that break down over other BMD systems: in other words, if you try to interpret it in terms of cost saving per RV, how does deceptive basing break down?

General TATE. I can only talk to the cost for the defense. For example, we have 1,000 Minuteman silos today. If we built another 1,000 silos and deceptively based 100 MX missiles in them, the BMD system would cost about $2 billion. I do not know what the cost would be to the Air Force for building 1,000 additional silos out there, but it would be a substantial cost.

Senator COHEN. I guess the key is that it is most cost effective to have a deceptive basing mode for the BMD on the defensive missile, defensive capability, as compared to, No. 1, a deceptive basing of the offensive missile?

General TATE. What I am talking about here, sir, is that you could have deceptive basing of either or both the offense and defense. It is possible to do that.

Senator COHEN. Except you have canceled out on the offensive side; you can't do that any more.

General TATE. I did not understand your statement.

Senator COHEN. Except that DOD has said you will terminate any further consideration of deceptive basing on the offensive missile, the ICBM. In other words, what I am getting at, if we are trying to get a cost analysis of whether this makes more sense on a saving per missile to do it in a deceptive basing mode with a defensive system, how does that compare with the offensive deceptive basing mode?

On the one hand, you are breaking it down. You go from $18 billion to $16 billion, depending on whether it is fixed or whether it is mobile.

I am asking, how do you compare that with the deceptive basing mode on the offensive capability. The answer is, you don't know because you have been terminated from investigating that option?

General TATE. Yes, sir. I do not have a number on how much it would cost to have deceptive basing for those offensive missiles, but it certainly could be calculated.

Senator COHEN. The staff has pointed out that studies have been done before. It has been indicated that you get 100-percent improvement on deceptive basing of an offensive capability. The question becomes, if you have 100 percent more effectiveness, how does that translate into cost effectiveness? In other words, if this committee is going to get back to making judgments once again as to whether we go with this system, and we accepted DOD's recommendation of no more deceptive basing for the offensive system, then it is a legitimate inquiry by this committee and by the Congress to ask, well, what is more cost effective?

This seems on the surface to be saying an $18 billion system for the fixed terminal defensive deceptive basing mode, you can be reduced down to $16 billion if you have the mobile. That looks pretty attractive compared to the mobile basing mode for the ICBM, the MX system, except if you start getting down to, not cost efficiency, but actual effectiveness. If you make a statement that you get 100 percent improvement if you have a mobile MX missile, then how does that translate into dollars and cents?

We have to have that as a factor. Apparently you are not in a position to tell me that?

General TATE. No sir, I am not.

Senator COHEN. Is there anything you have in the record that you could supply the committee to make that kind of assessment?

General TATE. Yes, sir. I believe we can supply information for the record. I do not have that kind of information with me today.

Senator COHEN. That will be helpful for us to analyze. It looks attractive that we can go in this direction. You can get this kind of protection; you can save [deleted] reentry vehicles and you will have [deleted] with an expenditure of $16-plus billion. If you compare that to a mobile MX system, where you get 100 percent improvement in terms of survivability, how does that translate into dollars and cents? That is the kind of judgment we would like to make or be in a position to make.

General TATE. All right, sir.

[The information follows:]

COST EFFECTIVENESS

The following chart provides cost effectiveness on a per RV basis for the options of deceptive BMD with fixed based ICBMs and deceptive BMD with deceptively based ICBMs.

[Chart deleted.]

Senator COHEN. General, I must apologize to you again. I have to go over and vote. We will have to suspend until Senator Warner comes back.

[Brief recess.]

Senator WARNER. We will resume the hearing so that you can place in the record the balance of your chart material and then we will submit questions for the record.

General TATE. I have three charts remaining.

Senator Cohen was asking a question. I am not certain that I satisfied his question.

Senator WARNER. Why don't you answer the question for the record.

General TATE. All right, sir, we will do that.

I wanted to give you a comparison of the program shown on the upper part of the chart [chart deleted] which shows the program we have been following in our low altitude defense system pre-prototype demonstration program and the program that we have recommended. The new program is now funded in the budget for an accelerated development program for terminal defense.

We had been on a preprototype demonstration program to be completed in [deleted] with the possibility of an IOC in [deleted]. That was a relatively slow paced program that would not have entered engineering development until [deleted]. As a result of the new interest shown by the Reagan administration during the last 8 or 9 months, we came up with another program which we are calling an accelerated development program.

As you see, there is considerably more money in the budget in 1982, 1983, and 1984 in order to accelerate that program. All of these moneys are now in the budget and so far as I know the only action that has been taken of an adverse nature has been a cut in the Armed Services Committees of $17 million in the 1982 funds. But this program, funded at these levels, will allow us, we believe, to do the work that will be necessary so that by 1984 we would have sufficient information for decisionmaking. For example, what information must be provided to make a decision whether or not to employ BMD, one of the long-term options that was in the President's plan announced on October 2?

Should that decision be made to deploy the system, we would go into full-scale engineering development, with the intent of reaching an

IOC before the end of [deleted]. That would be a system which I described earlier, Senator Warner, a terminal defense system.

Senator **Warner.** All right.

[Chart deleted.]

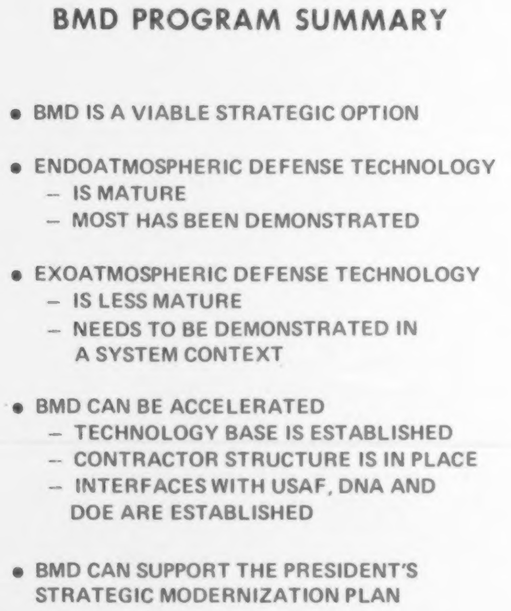
General **Tate.** This chart summarizes some of the information that we have talked about here this afternoon. When the decision is made in 1984, there are a number of things that are possible. One, of course, is to do nothing. If nothing is done and the Minuteman missiles are left in place together with 100 new MX missiles, then about [deleted] Soviet RV's would be about all that would be required to draw that force down to a pretty low number.

We could proceed with a BMD system which is deceptively based at a cost of $16 billion, which would charge about [deleted] Soviet RV's to draw our ICBMs down to a survivor level of [deleted].

On the other hand, a fixed based BMD system which does not use deceptively based components would not be quite that good; it would charge only about [deleted] Soviet reentry vehicles to draw our ICBM force down to about [deleted].

Also, we could add the overlay, using the exoatmospheric components of our program, and you can define a system which would charge the Soviets about [deleted] reentry vehicles to bring the force down to [deleted].

Another way to go, of course, would be to have some sort of deceptive basing for the MX missile—100 missiles in 1,000 new silos— something other than an MPS system, which also could result in charging the Soviets [deleted] reentry vehicles. I have shown cost numbers for these other BMD systems. I have not shown the cost for this deceptively based MX case because we don't know what it would be. We believe that the BMD system that would go with this deceptive basing mode would be on the order of $2 billion, but I do not know what the Air Force cost would be for including silo construction costs.



BMD PROGRAM SUMMARY

- BMD IS A VIABLE STRATEGIC OPTION
- ENDOATMOSPHERIC DEFENSE TECHNOLOGY
  - IS MATURE
  - MOST HAS BEEN DEMONSTRATED
- EXOATMOSPHERIC DEFENSE TECHNOLOGY
  - IS LESS MATURE
  - NEEDS TO BE DEMONSTRATED IN A SYSTEM CONTEXT
- BMD CAN BE ACCELERATED
  - TECHNOLOGY BASE IS ESTABLISHED
  - CONTRACTOR STRUCTURE IS IN PLACE
  - INTERFACES WITH USAF, DNA AND DOE ARE ESTABLISHED
- BMD CAN SUPPORT THE PRESIDENT'S STRATEGIC MODERNIZATION PLAN

In final summary we believe that BMD certainly is a viable option in the strategic picture at this point.

With regard to our low altitude technology in the endoatmosphere, we have been working that problem for 25 years. We believe we understand it and we can proceed with this program at low risk because of this mature technology and the fact we have demonstrated it.

In the exoatmosphere, we are dealing with less mature technology which has not been totally validated, but some of the significant pieces of it have been. It needs to be demonstrated in a system context in order to build confidence that we understand the whole picture; and in order to do that, of course, it would require some additional funds not currently in the budget.

We believe we can accelerate our programs. We have all of the necessary ingredients; the technology, the contract structure, and the interfaces with other Government agencies, which would be necessary, including the DOE, for the warheads.

We believe the program can support the President's strategic modernization plan.

That is all I have planned, sir, in the way of a briefing.

Senator WARNER. Unless my colleagues have questions, we will put them in the record. Once again, I tender my apologies for my inability to be here at this hearing. I will study the record with great care, because this is an essential part of the President's program. Thank you.

QUESTIONS SUBMITTED BY SENATOR JOHN W. WARNER

ADVANTAGES OF DECEPTIVE-BASING

Senator WARNER. Can you explain for the committee the advantages of deceptive-basing from a BMD point of view? Address both the offensive and defensive missiles and the defensive radars.

General TATE. Deceptive-basing of [deleted] ICBMs allows a significant reduction in the deployed quantities of BMD components while retaining high effectiveness. The effect of deceptive-basing of ICBMs [deleted] is that an adversary would be required to attack many more aimpoints in order to insure the destruction of U.S. ICBMs; therefore, the number of RVs available for targeting to each aimpoint would be reduced. Fewer RVs per defended aimpoint not only leads to fewer BMD components required but also eases the leakage requirements, thus reducing the stress on the defense technology.

Deceptive-basing of the ICBMs [deleted] is attractive from a BMD point of view because of the leverage available when defending the ICBM locations. For example, if the defense is capable of engaging up to [deleted] RVs per ICBM and each ICBM is deceptively deployed at [deleted] locations, then the attacker must use [deleted] RVs to achieve a single ICBM kill.

SURVIVABLE OPTICAL FORWARD ACQUISITION SYSTEM

Senator WARNER. Can you describe for this subcommitee the Survivable Optical Forward Acquisition System and tell us how important you believe this technology?

General TATE. Survivable Optical Forward Acquisition System (SOFAS) is a rocket launched optical sensor system concept that could augment the nation's tactical warning and attack assessment capabilities using long wave infrared sensors. This is technology that has been developed in the BMD exoatmospheric defense technology program and is sufficiently mature for this new role. The SOFAS probes could be launched and on station within [deleted]. The SOFAS sensors would search the threat corridors and provide timely and continuous vital information regarding the nature and size of strategic attack directly to the National Command Authority, NORAD, and the Strategic Air Command.

This is believed to be an extremely important technology application because SOFAS, in conjunction with [deleted] and BMEWS, would deny the U.S.S.R. an undetected first strike against the U.S. land-based ICBMs, thereby creating deterrence [deleted]. The information from SOFAS would provide an [deleted].

This information would be valuable for U.S. BMD as well as U.S. retaliatory counterforce strikes.

EXOATMOSPHERIC INTERCEPT PROGRAM

Senator WARNER. Can you tell me what the plans are for the exoatmospheric intercept program after 1984 and how you would prefer to proceed?

General TATE. Because of limited funding, current plans for exoatmospheric defense after 1984 [deleted]. The technology development program will address major technical issues associated with the exoatmospheric defense system. A sizeable portion of the funds will be used for obtaining an [deleted]. This constrained funding effort will [deleted]. The currently planned budget allocation for exoatmospheric defense is as follows:

(Then year $M): Fiscal year 1982, 122; fiscal year 1983, 101 [deleted].

A significant increase in funding would be required for full development and deployment. The addition of approximately $100M per year in fiscal years 1984–87 would allow the resolution of system critical issues sufficient to support an [deleted].

We will now go into open session with our next witness, Dr. Perry.

[Whereupon, at 3:15 p.m., the subcommittee proceeded in open session.]

STRATEGIC FORCES PLANS AND PROGRAMS

The subcommittee met in open session, at 3:26 p.m., pursuant to notice, in room 212, Russell Senate Office Building, Senator John W. Warner (chairman) presiding.

Present: Senators Warner, Cohen, Quayle, Nunn, and Exon.

Staff present: Rhett B. Dawson, staff director and chief counsel; Francis J. Sullivan, minority staff director; Paul C. Besozzi, minority counsel; Frank J. Gaffney, Ronald F. Lehman, David S. Lyles, E. George Riedel, James C. Smith, Kathleen Troia, professional staff members; and Karen A. Love, staff assistant.

Also present: Jim Dykstra, assistant to Senator Cohen, Richard Galen, assistant to Senator Quayle; Paul Schreiber, assistant to Senator Denton, Frank Krebs, assistant to Senator Cannon; Arnold Punaro, assistant to Senator Nunn; Greg Pallas, assistant to Senator Exon; and Peter Lennon, assistant to Senator Levin.

Senator WARNER. This may well be the last of the hearings held by the Subcommittee on Strategic Programs for this year's authorization bill. I think the number is 10. I think it is entirely fitting that as our last witness we welcome back the distinguished American and former public servant, Dr. William J. Perry.

In his service as Under Secreary of Defense for Research and Engineering, Dr. Perry earned a reputation for a brilliant analytical mind in coping with contentious Members of Congress. Further I sayeth not.

Senator NUNN. I am glad to get Bill Perry back here. I hope one of these days we will be able to go to a format where we get our experts at the same table in a nice, friendly atmosphere where we can isolate what they agree on and isolate what they don't agree on.

We are always overwhelmed with people who are experts. Bill Perry is the best in terms of articulating his view. We don't have that kind of format. I know many people object to it. I do hope, Mr. Chairman, one of these days we will be able to get people with differing opinions but with great capabilities and great respect in the same room at the same time, so that we can isolate the differences.

But Dr. Perry will make a major contribution, no doubt about that. I am delighted to welcome him here.

Senator WARNER. Dr. Perry, we will proceed in open session and then close the hearing. You can testify accordingly.

STATEMENT OF DR. WILLIAM J. PERRY, FORMER UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING

Dr. PERRY. Thank you. After that introduction, I think what I am going to say will be an anticlimax.

I am not here today to criticize the administration's defense program. I must say in all candor that there are many aspects of this defense program that I am strongly supportive of. In particular, I applaud the increased emphasis on defense which has come with this fiscal 1982 budget.

Nor am I here to defend the programs proposed by the last administration. Even though I helped formulate them and believed in them, I did not then and do not now believe they were unique solutions to problems facing the country. They were reasonable but not unique solutions.

What I will try to do is give an objective assessment of specific programs in the President's proposal. What I proposed to do is, just as quickly as I can, cover each of the five major programs and give you a brief summary assessment and then go back and talk as much as you would like about any one of them, or two of them, in which you have special interest. Any one of these five programs is worthy of an hour or two of discussion. I will try to give a minute or two to each of them and then we can go back to them.

COMMAND, COMMUNICATIONS, AND CONTROL, C^3

First and I think in some ways the most noteworthy in the proposal was the so-called C^3 programs. That is often put at the bottom of the list. I would like to bring it up to the top and say that that is a fine proposal. I hope that the Senate will support that proposal. It will give us increased confidence in our ability to transmit an emergency action message if necessary, and it will give us a decreased probability of being put in a position where we may be subjected to a false alarm.

Both of those, I think, are very important to the country's, indeed the world's, security. So I applaud that program and I urge the Senate to support it. I will put two caveats on it, though:

First of all, I think you would be mistaken if you believed that that program, even at its full level, would put this country in a position where we could confidently go to a launch-under-attack posture. I do not believe that program or any program we could conceive of would put us in a position where being dependent on launch under attack is safe.

Second, I believe you would be misled if you believed that that program would give you what is sometimes referred to as enduring warfighting capability in the presence of nuclear detonations. I do not believe the program would have that kind of capability. So I do want to applaud that program and recommend support for it, but I think it is important not to be misled about what it can or cannot do.

TRIDENT II MISSILE PROGRAM

The Trident II program, also I think is a program well worth your support, for two reasons—and sometimes these reasons get mixed up:

First of all, it is a very cost effective measure: that is, given the tremendous expense of building and operating Trident submarines it is foolish not to put the full capability of weapons in those submarines. Depending on what is actually achieved in the Trident II development program, we can get on the order of a 75-percent increase in capability per Trident submarine by having Trident II missiles instead of Trident I missiles in it. So that is one very obvious benefit. I think the program can pay for itself just on that basis.

There is a second point as well, and that is, we can alternatively deploy reentry vehicles in Trident II which have an improved performance capability. Instead of building lots of warheads equivalent to those on the present Trident I missile, we could put a fewer number of warheads equivalent to those now on the Minuteman III. Effectively then, we could make the Trident II into a missile where each of those warheads would have a Minuteman III capability in terms of nuclear yield and accuracy, but which would have perhaps twice as many warheads as the Minuteman III. So it could give to the most survivable component of our strategic forces a capability equivalent to what we now have in the Minuteman III force. That, in itself, is a capability which I think would be worth achieving.

I will go from the Trident II program to the MX.

MX MISSILE

I am sure it is no surprise to this committee when I say that I was disappointed at the solution that is proposed to the MX basing problem. I believe—and I testified to this committee many times—that the Minuteman vulnerability problem is real. But the proposed solution is unacceptable, in my judgment. I have read several reports describing why it is a good solution. The burden of the argument is that by superhardening the silos you make the problem of destroying them harder for the Soviets—you require them to develop a new guidance system and therefore you are buying time.

I submit that is simply not correct, that the Soviets presently have missiles which are capable of destroying those silos. All they have to do is mate their large, single RV warheads with the accuracy that they have presently demonstrated on the missiles, and they have a superhard silo-buster.

I make that statement irrespective of how hard we make our silos. The technical issue of whether they can be made harder, 3.000, 5,000, or 10,000 psi, is an interesting technical issue but it is irrelevant. The Soviets now have the capability where they can deliver their missiles with sufficient yield and sufficient accuracy so that the silo will be encompassed within the crater of the fireball, in which case hardness is quite irrelevant.

So, I believe that superhard silos is not a solution to the problem. At most, it requires the Soviets to target those relatively few silos with single RV missiles rather than multiple RV missiles. Superhardening could increase the cost to the Soviets attacking our silos if we did it with many, many silos, if we did it with thousands of them. But doing it with 36 or 50 or 100 silos has a negligible impact on the Soviet war-planner.

I made a strong statement about that because I believe that is an accurate assessment of the problem.

My recommendation to the Congress is simple, which is, that you reject that proposal.

CRUISE MISSILES

To go from the MX to the so-called air-breathing fleet, the cruise missile program is proposed to be continued. It won't surprise you to know that I endorse that and urge you, indeed, to continue that program.

B–52 MODERNIZATION

I was disappointed to see the B–52 improvements being dropped. I think that is poor economy. I think that is poor economy whether or not you proceed with the B–1. I would like to make a little plug for the B–52 while I am sitting here, because sometimes in our interest in getting a replacement airplane we have not given the B–52 sufficient credit. It has an outstanding range capability which is one of the major ways to measure the effectiveness of a bomber.

It also has, according to the best information that was available to me when I was in the Defense Department, probably a useful life of another 10 or 15 years minimum, based on the Air Force's follow-the-fleet program of estimating aircraft life. We think of it as an old airplane, but we forget about the fact that it does not get flown very often; while it is an old airplane, it does not have many miles on it, so to speak, and it still has a long, useful life.

But to really get operational utility out of the airplane, one has to replace the old, unreliable electronics in it. That is what the B–52 improvement program is, so whether or not you proceed with the B–1 program, the B–52 has a very fine capability and it should be maintained. Whether it is maintained in the strategic forces or the conventional forces can be determined, but in terms of its range and payload capability, it is better than any other airplane that is in the force today, and it will have that capability for another 10 or 15 years if it is properly maintained.

B–1 BOMBER

Relative to the B–1, I have mixed feelings on the subject, and I will not give you a clear, unequivocal recommendation. When the program was canceled in 1977, the reasons which dominated our thinking at that time were that a lookdown/shootdown missile capability was evolving in the Soviet Union and that the B–1 would not be capable of penetrating against that kind of defense. We also believed that a cruise missile was an adequate solution to that problem and at that time we even had Stealth as a gleam in our eyes but not much more than that.

Where do we stand today vis-a-vis that estimate in 1977?

First of all, the lookdown/shootdown capability which we were projecting in 1977 has, in fact, materialized and at about the rate that we estimated.

Second, the cruise missile program which we believed would be a successful program has turned out to be a successful program and, in fact, has demonstrated its ability to penetrate the kind of systems that I projected to you.

Third, the gleam in our eye has solidified into something more impressive, so one might argue that the basis for the decision in 1977 is even stronger in 1981.

I would submit, however, that the B-1 that is being proposed in this budget, the so-called B-1B, is a different airplane than we were considering in 1981, and it does require different consideration.

ECM SYSTEM

The two factors that are most significant is that there will be some modest reduction in radar cross section, which is a plus in terms of ability to penetrate; and, second, there will be a new and improved ECM system designed for the airplane.

Let me comment that if the B-1 program goes ahead, I think it is mandatory that those two changes be made in it, because those are the only two that give it any capability of dealing with modern air defenses, in my judgment.

Now, one should not be misled into thinking that the improvement in cross section with the B-1 will be sufficient to allow it to defeat the lookdown/shootdown missile which we see as a threat; it just makes that job somewhat more difficult.

Without quoting specific numbers that are being projected, let me hypothesize numbers, namely, that if we could achieve a tenfold reduction in cross section or a 10-decibel reduction as electronic engineers say, you would get approximately a 2-to-1 reduction in the effective range of a defensive missile system. You make the defensive system task much more difficult if his engagement envelope is reduced by a factor of two. That is what a tenfold reduction in radar cross section can do for that airplane.

In addition to that, an ECM system is being postulated which is believed to be capable of dealing with the Soviet radar. I will be happy if you would care to discuss this in more detail in closed session.

All I will say in open session is that any countermeasure system, any electronic countermeasure system, does not provide an absolute high confidence defense and is subject to countercountermeasures; therefore, while I have spent a fair amount of my career in the analysis and design of electronic countermeasure systems, I would not want to ever suggest that the confidence of the success of a weapon system should rest entirely on ECM. We may be dangerously close to leaning on that need almost exclusively.

Now, having said that, let me now further argue that, however, the ECM countercountermeasure struggle comes out, the B-1B will be extremely useful but not optimum as a future cruise-missile carrier. Second, it will be useful, maybe close to optimum, in a nonnuclear engagement in a conventional war. In many ways, that is the way the airplane ought to be considered, as to what contribution it can make to our conventional war-fighting ability.

In summary, on the B–1B I do not take the position that some of its detractors have taken, that the B–1B is a "turkey," which is a cliche which has been used. I think it is a fine airplane and I think it has real capability in conventional warfare, but I do not believe we should delude ourselves into thinking it is a high confidence penetrator of sophisticated, modern air defenses that will be in the Soviet Union in the late 1980's and 1990's.

I would not care to engage in a guessing game as to what is the year at which the B–1B will no longer be effective in that role. No one can say that with any confidence in this country or in the Soviet Union. It depends on the vigor and skill with which the Soviets pursue countercountermeasures 5, 6, 7, or 8 years from now. That is an extremely difficult estimate to project. I have read testimony that its lifetime would probably last until 1990. I would not argue with that figure, but I could make a case a few years earlier or few years later, depending on how optimistic or pessimistic I wanted to be about Soviet reactions. It does depend on the countercountermeasure reaction.

I would sum up my views on the B–1B by saying that at the time of the spring budget submission I was reasonably sanguine about it, that I thought within the size of that budget it was a reasonable judgment of priorities.

When I look at the fall budget, with reductions that have been made in the fall budget since then, I take a different view on it. All I am doing now is giving you my own subjective view of priorities. I would have not placed this program on as high a priority as readiness item since cut out in the fall budget. I would not place it at as high a priority as the Roland missile which was cut out.

Given a choice, I would have bought more tactical airplanes, more F–15's and F–16's. So, to me, it is not a black and white issue; it is a priority judgment issue.

My priority judgment would be to put more emphasis on tactical forces, more emphasis on readiness in lieu of that; but that is a judgment call.

BALLISTIC MISSILE DEFENSE (BMD)

I would like to make a statement on ballistic missile defense. That was not a major part of the President's proposal, but he mentioned almost parenthetically that one would be looking at BMD as a possible defense for either the superhardened silos or perhaps Minuteman.

LOAD SYSTEM

Just a brief comment on the status of LoAD system. The last time I made a careful evaluation of it, I believe that it was or could be designed to be capable of extracting a 2-to-1 or perhaps a 3-to-1 cost from the Soviets wanting to attack our silos; that is, we could require them to expend two or three RV's instead of one RV to have any confidence they could defeat the silo.

I have never seen the evidence which would suggest that we could with confidence extract any higher cost, 4 or 5 or 6 to 1 cost; therefore, the question about a LoAD system, in my judgment, is not whether it works or does not work. I have reasonably high confidence you could shoot down the first RV and maybe the second. The question is, will it work in the defense of a thinly deployed system? Will it do you any good in defending 36 silos or 50 silos or 100 silos? In my judgment, the answer to that is no.

That is a different question than asking whether LoAD would be useful in defending 4,000 or 5,000 silos. Now, you drive the cost up to unacceptable levels in trying to mount an attacking system, so I suggest if we are thinking of BMD, until or unless someone can present a way of a BMD system operating in a nuclear environment, whether three or four or five or six interceptors being engaged within a short period of time, the way to think about it then is simply what kind of cost does it extract from the attacker. My best estimate now is that there is no reason to be optimistic it can extract any more than 3 to 1 cost in RV's. Therefore, you have to look at how many silos are being defended before you can assess whether that is a negligible or important improvement in survivability.

In a sense then, the BMD issue is like the superhard silos: What each does is extract a somewhat higher cost from the offense; it does not defeat it. The cost is proportional to how many silos are being built. In a thinly deployed system of 36, 50, 100, you are hardly likely to get benefits from those systems. But you do get benefits once you consider superhardening silos or BMD systems in the context of a major deployment of several thousand silos.

Senator Warner, that summarizes my views on these issues. I will be happy to entertain questions on any points I have made.

Senator WARNER. I will proceed quickly to ask a few questions, and then defer to my colleagues.

BASING ALTERNATIVES

Recently in the Armed Services Committee, we have sought and pretty well received now a clarification of the alternatives to be considered in 1984 on the basing alternatives. That clarification now provides the administration will look at deceptive basing in combination with BMD. I am not sure you are aware of that fact.

Dr. PERRY. Yes, I have heard that was being considered.

Senator WARNER. Does that alter in any way your most recent comments here?

Dr. PERRY. No; I would rephrase it in a different way; namely, that the effectiveness of the BMD system will probably be three times the number of apparent targets. I think that covers both the single-silo deployment and the deceptive-silo deployment. Therefore, the advantage of deceptive basing is simply to give you a leverage, a number qualified by this three, without necessarily building any more missiles.

That is one of the reasons we entertain it as a reasonable consideration as part of a multiple protective shelter system, because here the number we were multiplying was 4,600. You multiply that number by three and you get a very different result.

I am not suggesting that it is not possible to design or build an ABM system that would give you a higher multiple factor of three.

Senator **Warner**. The Stealth program, the rate at which it can be brought in, at the present the administration is representing that the milestones, the R. & D. milestones, engineering development milestones, will be the criteria and not budgetary considerations. Do you agree that that is a proper way to pace the development of the advanced technology bomber?

Dr. **Perry**. The program, all the time I was associated with it, was paced by engineering milestones—I guess that is a way of putting it—not by budgetary considerations. My own belief is that the program gives a high enough leverage capability to our military forces that that is the way it ought to be structured.

I would think, again, it would be poor economy to be slowing down that program on the basis of budget, even if you decide you are going to pace it on engineering milestones, you can still have honest disagreements among the technical people about which is the most prudent way of pacing those milestones.

Senator **Warner**. Within that framework?

Dr. **Perry**. Within that framework.

Senator **Warner**. Have you had an opportunity to examine the funding profile for the ATB through fiscal year 1982-83 and is it sufficient, in your judgment?

Dr. **Perry**. I have not, Senator Warner.

Senator **Warner**. If you have that opportunity, if you can make that information available, because I would very much want to have your views on that——

Dr. **Perry**. I will be happy to discuss that with you privately.

C^3 SYSTEM

Senator **Warner**. You opened up with comments on the C^3 system, yet I gained the clear impression that you felt that the program as announced by the President, which in a sense was an augmentation of an earlier enhancement this subcommittee had initiated in the 1982 cycle, that that program will not have an enduring characteristic and certainly not a launch under warning capability.

Is it possible to design such a system to meet those two goals?

Dr. **Perry**. No, I think the program is as fine a program as is possible to design. What I am expressing more is the generic reservation that an intelligence system, a warning system, by its very nature, has to operate within line of sight of its targets. In the case of a system that is warning of missile launch from the Soviet Union, it has to have line of sight to the Soviet Union, which means, conversely, the Soviet Union has line of sight to our warning system.

Our communications system by its very nature, when it is operating, cannot be in deep holes in the ground, cannot be covered with concrete. You can put antennas in deep submerged silos when they are not operating, but for the purpose of an emergency action message, for the purpose of having communications and warning against surprise attack, an important part of your communications system has to be exposed in order to function. That means they are going to be susceptible to attack.

For those technical reasons, one should be leery about the long-term survivability of the elements of your warning system and communications system.

About the only way of achieving that kind of survivability is by deceptive basing. Since you cannot harden them effectively, and since you have to expose them, you can try to be deceptive about how they are based, and that gives you some margin of safety.

The other factor is one which is very difficult to quantify. Nobody really has a very good assessment on how the human factors, human links, in this communications and warning system will operate the 2d day, the 5th day or the 10th day of a prolonged nuclear war, what the psychological reaction of people may be, how well the chain of command would operate if the top six layers of the command were missing.

Those are largely imponderable issues. For those technical reasons and psychological uncertainties, I suggest that it is not possible to have any real certainty as to how your command and control intelligence system would operate 1 week or 2 weeks into a prolonged nuclear exchange. One should not expect too much of it in that regard.

Senator WARNER. Thank you very much, Dr. Perry.

Senator Nunn?

Senator NUNN. Dr. Perry, you are unequivocal in your expression of opposition to the funding of a hardening of the silos for a place to deploy MX; is that correct?

Dr. PERRY. That is correct.

Senator NUNN. President Reagan seems to be equally unequivocal in his opposition to the MPS basing mode, so if we take those two givens, that the President's new program simply will not do the job, as you put it, and that he is not going to go back to the MPS system, and if you were faced then with those two givens, would you vote to fund the MX missile and bet on the probability of discovering some new basing mode that would be adequate?

Dr. PERRY. I am happy that I am not going to be confronted with that decision.

Senator NUNN. That is the very decision we are going to have to vote on next week or in 2 weeks.

Dr. PERRY. I don't have any confidence that any of the three longer term basing systems that are being studied will produce anything that will be any better, so I guess that would lead me to the conclusion then that would make me skeptical about spending the money to build the missile if I did not believe I could get a satisfactory way of basing it.

If I felt that way, which is my inclination, that would certainly motivate me to put the maximum resources and the maximum priority in the Trident II program and to include in the Trident II program, in addition to the Trident I type of warhead, a larger, highly accurate warhead option, so that you would have ICBM-type capabilities onboard a submarine force.

Even proceeding with the Trident II program, you have, first of all, an option on how much emphasis you put on it and, therefore, what kind of schedules you get; and, second, you have the option of whether you continue it in the Trident I mode with relatively small and relatively less effective warheads, or whether you specifically plan for a high-yield, highly-accurate warhead option.

Certainly if I were not proceeding with an MX program, there is no doubt in my mind as to how I would proceed on Trident II. I would go all out in that effort.

You know from earlier testimony I preferred an MX solution, but my preference for the MX solution was contingent on its being in a survivable basing. I have no enthusiasm for an MX system which is not in a survivable basing.

Senator NUNN. If you put MX in a nonsurvivable mode, whether it is an open silo or hardened silo, do you believe that the strong implication would be going out to the Soviet Union that we were embarking on a strategy that would have to inevitably lead to launch under attack?

Dr. PERRY. I would not put it that strongly, Senator Nunn. We would be doing, in effect, nothing different from what they have already done, which is putting a big, high-yield, accurate missile in a relatively unprotected silo.

It would seem to me they can't conclude anything about our motives, any different from what we might conclude about theirs. There would be symmetry in the situation. My concern with that though, is that if we had this very accurate, very threatening missile in unprotected silos, and if they do not go to a survivable system themselves, I don't know what they are going to do, but if they do not go to one themselves, then that simply increases the hair trigger.

Senator NUNN. On both sides?

Dr. PERRY. On both sides. I am more worried about their side, because that now means that if—during a state of high tension in the world—there is some ambiguous message that gets into that warning center and they feel they are going to lose what to them is more than three-fourths of their strategic forces to an attack, then that puts them on a hair trigger. I don't know how good their warning system is. I don't know how good their assessment system is. I don't have that much confidence in our own from the point of view of occasional false alarms.

I have lived through some false alarms in our system and in each case we had the luxury of being able to ride out the false alarm because we knew first of all, our ICBM's were not susceptible to attack; and, second, even if they were, we still had the bulk of our forces in submarines and bombers. So, we are able to ride out the false alarms in our system.

I am very concerned about putting them in a position where they will feel they don't have that luxury, when I don't know how good their warning system is, I don't know how reliable their computers are, how susceptible they will be to, sending out false alarms.

Senator NUNN. If we don't find any kind of deceptive or mobile basing mode, or both, for the MX, and we deploy that MX in the existing silos, and if the Soviets don't go to some mobile or deceptive system, so that their ICBM's could survive, would we not have evolved in both countries into a situation where we had rather significantly lowered the nuclear threshold?

Dr. **Perry**. I don't believe from a point of view of premeditated attack, Senator Nunn. However, I believe that it raises the danger of an accidental war.

Senator **Nunn**. Or third country trigger?

Dr. **Perry**. An accidental war or war by miscalculation. It does not necessarily lower the threshold in terms of a premeditated attack.

Senator **Nunn**. I share that apprehension, I must say.

Dr. Perry, there are some questions I have for the closed session.

B–1

What do you think of the argument on the B–1, that you need the B–1 because it greatly reduces the vulnerability of the bombers to an SLBM attack because of its fast escape capabilities?

Dr. **Perry**. I do not believe that the Soviets would launch an SLBM attack on our bomber bases without also attacking our ICBM silos. If one looks at the time lines involved in these two different attacks, one of them is incompatible with the other; that is, they really have to choose whether they want to make a surprise attack on our bomber bases or a surprise attack on our silos. They can't do them both at once.

An attack on one of them is the trigger to use for getting the other ones away, so I think our primary security today against an SLBM attack on our bomber bases is the fact that that would inevitably trigger an ICBM launch from the United States, which is an even more serious threat to the Soviet Union.

So, I don't see that as a serious problem for that reason, as long as we maintain a substantial ICBM capability such as we have today.

ATB

Senator **Nunn**. Without getting into classified matters, how do you rate the ATB in terms of its potential? How do you compare it to the B–1?

Dr. **Perry**. I believe the ATB will be capable of penetrating any Soviet air defense that we know of now or can reasonably project for the rest of the century. Beyond that, I don't say simply because I lose my ability to project much beyond that point.

Senator **Nunn**. Do you have any ballpark estimates as to the differences in funding the Soviets would have to expend in order to counter the ATB compared to the air defenses they would be providing for defense against the B–1?

Dr. **Perry**. I don't have figures on that, Senator Nunn. I can give you a few qualitative statements.

Basically, the look-down/shoot-down system that they are now developing and just entering in deployment is designed for bomber defense, is more or less optimized for bomber defense, and is a powerful defense against the original B–1.

If we put in an effective ECM system against that specific defense, then we drive them, as I say, to a countercountermeasure system. That is a modification of the system they are already starting to build.

On the other hand, our Stealth comeback to that defense, simply nullifies their air defense and requires them to start over again. There is nothing they can do in fine-tuning or modifying or adjusting that defensive system to deal with Stealth, so it means a new defensive system from the ground up.

Senator NUNN. So that the ATB would require the Soviets to really almost totally rebuild their air defense system?

Dr. PERRY. I believe it would, yes.

Senator NUNN. You are talking about at least hundreds of billions of dollars, are you not, somewhere in that range?

Dr. PERRY. If they can do it at all, yes. Their present air defense system costs well over $100 billion.

Senator NUNN. I assume then, as Senator Warner developed with you, that you would accelerate the Stealth technology in every way possible?

Dr. PERRY. Consistent with prudent engineering judgment, yes. I think that was the thrust of the question that he was asking.

I am not trying to second guess the engineering judgment of the people who are running the program now. I am only saying that the criterion I would put on the program is prudent engineering judgment. I would want to be convinced that it was that and not budgetary constraints that was pacing the schedule.

Senator NUNN. Dr. Perry, have you concluded that the MX, as we did in the questioning a few minutes ago, that the MX is not survivable in the mode that President Reagan proposed, and he is not likely to go back to the MPS system or some other form of relatively invulnerable basing mode, and you then decided you are going to vote against the MX, and then if you further decided the B-1 was squeezing out so many programs in the conventional area, and also perhaps delaying some of the development on the Stealth technology, what then would you do if you were going to come down negatively on both of those programs, what then would you do to give a forward thrust to our overall strategic deterrent?

Dr. PERRY. I would accelerate Trident II. I would insure that Trident II had a hard target kill capability. I would accelerate the cruise missile program.

Senator NUNN. Keep the B-52's?

Dr. PERRY. I would restore and perhaps accelerate the modification, the replacement of the electronics, on the B-52. I would certainly consider other basings of the cruise missile besides the ALCM basing.

I haven't thought that through in detail, so I don't want to make a specific recommendation there.

Senator WARNER. Senator Cohen?

Dr. PERRY. I might also say, I would maintain a high rate of R. & D. in the BMD program. Notwithstanding the apprehensions I have about BMD, I do believe that a vigorous R. & D. program is appropriate and would be even more appropriate in the circumstances you have described.

Senator WARNER. Senator Cohen?

MOBILE/LAND BASING FOR MX

Senator COHEN. Dr. Perry, I would like to follow up on the line Senator Nunn was questioning you, about the kind of decision we have to make in the next few weeks. He asked you what would you do if the administration is adamantly opposed to any kind of mobile basing, land basing for the MX. Assuming that the administration through 1984 remains adamant in its opposition, where do you go?

You suggested Trident II. I think Harold Brown in today's paper indicated, even assuming you put more emphasis on your Trident II, that you have a problem in terms of numbers, that you free up immediately some 9,000 RV's for the Soviets to play with in targeting on your submarine capability. You give them a great incentive to enhance their R. & D. and ASW research and development. So that presents you with an unpalatable choice, even though you go to a hard target kill capability with enhanced Trident II.

I assume you have to increase your numbers as well, not just the missile capability. You have to get bigger numbers and more Tridents in order to offset the 9,000 RV's in your submarine force.

In your deliberations when you were with the DOD, did, in your opinion, political considerations enter into your deliberations as to whether you would go to land basing or not? Was that a factor in your mind?

Dr. PERRY. Was it a factor originally when the MX decision was made?

Senator COHEN. Let me put it this way, without being too hypothetical about it: A lot of us have grave apprehensions about the direction we are going, in terms of a hardened silo capability. The other reality is such that a number of us realize that the Europeans are looking at the United States to see whether we are going to put our MX in a land-based mode.

Notwithstanding that our land is currently at risk with Minuteman II's and III's and Titans, a good many Europeans, even the most conservative CDU members, would indicate that unless we are willing to put our land at risk with our MX, you cannot expect them to go forward with TNF and put Pershing II's on their soil. You have them saying, "We don't like the mobile MPS, but we have something in between which will still preserve the option; in the meantime, we are going forward with a land-based MX system."

Would that be a factor in your considerations, assuming you had to make a decision today?

Dr. PERRY. I would worry about that. It would seem to me that the logic of the situation, which probably does not cut much ice, would not support that view, because we are still maintaining 1,000 Minutemen silos which are becoming more vulnerable every day.

If they would like us to demonstrate we have a vulnerable target in the continental United States, we have it in spades; but they want a new vulnerable target, not an old vulnerable target.

Senator COHEN. I agree with you, but I am asking you a serious question: Did you not take it into account?

Dr. PERRY. I would take it into account. I would say notwithstanding the impeccable logic I just gave to you. I would think there is a reasonable probability that the TNF would become unraveled with this decision. I think there is a reasonable probability it will become unraveled anyway, so we are now comparing a somewhat higher probability.

Senator COHEN. I will rephrase it: Would it be a legitimate factor, assuming I agree with your cynicism about the potential for TNF in the future, for us to take into account?

Dr. PERRY. Yes. If I were in your position, I would take it into account.

Senator COHEN. To go forward on a limited basis until we decide exactly what we are going to do?

Dr. PERRY. Yes; I would not make that decision, but I would take that into account. After taking it into account, I would decide not to do it, anyway.

Senator COHEN. Fair enough.

B-1

Let me come back to the B-1. You indicated it might be useful as a cruise missile carrier in a nonnuclear capability. The question I have is, if that is the case, unlike your former superior, Harold Brown, who indicates it is way overpriced as a cruise missile carrier or for conventional mode, would that then dictate, in your mind, that we should eliminate the effort made to reduce the radar cross section for cost factors and, No. 2, we should not put that much money into ECM? In other words, if you think it is a good air launched cruise missile carrier and a good conventional weapon system, now we have a problem. We have estimates going from $20 billion up to $39 billion: At the $39 billion scale, we have some problems here in view of the ATB.

If it is down around $20 or $25 billion, it is an easier question.

Now, if, in fact, the principal mission of the B-1, in your judgment, from the mid-1980's to the mid-1990's, would be air launched cruise missile carriers and conventional bombers, would you recommend we reduce or eliminate efforts to reduce radar cross section, and to go forward with ECM?

Dr. PERRY. No. I would still incorporate those efforts, because I believe that even in a limited war application in the 1990's we will be facing relatively sophisticated air defense systems.

The Soviet air defense systems today which might be in some other country in the late 1980's or 1990's pose some problems in themselves which I think I don't want to discuss in an open session.

Senator COHEN. Let me ask it another way:

What does penetration give you that an enhanced cruise missile capability does not? In other words, if you were to put the money into advanced air launched cruise missile technology, what is the difference in terms of military capability with a penetrator that can get through these sophisticated air defense systems, if, in fact, you have a bomber with advanced cruise missile technology?

Dr. PERRY. I think if you do the best you can on penetration, reduce the cross section as much as it can be reduced, put in the best ECM, then you have a fairly good prospect of having a machine that is reasonably effective in a tactical, limited war environment in the 1990's. You have to do all those things, even to give you the confidence of that. But I would have very little confidence with that same machine being able to operate in an extremely dense, extremely sophisticated environment, the Soviet ground-air defense system, in the 1990's.

BIG BIRD

Senator COHEN. You did not mention the Big Bird as an option for strategic systems. Would you categorically dismiss that?

Dr. PERRY. Quite honestly, I haven't studied that carefully enough to come to a considered judgment on it. I spent 4 or 5 months of my life, about half time, looking at an airborne MX system, considering different airplanes than the big bird. My reasons for finally being persuaded not to proceed with the airborne MX were not uniquely tied to the airplane. Probably they would apply equally well to the big bird.

One of those reasons is that by the late 1980's or the 1990's it will be possible for us or the Soviets to have systems that can detect airplanes in flight. If we proceed on a program that offers that sort of incentive, then that might be a possible counter to it. Therefore, quite aside from the issue of how expensive it would be to build the airplane and the operational problems of maintaining a continuous air patrol and the cost of maintaining continuous air patrol, there is what I consider to be a fatal flaw in a continuous air patrol airplane carrying ICBM's, and that is, in the time period we are talking about it could be detected and it could be targeted not by other airplanes but by directing a barrage of nuclear missiles around it.

I would be concerned about that, irrespective of the design of the airplane. I have to say I have not looked at the design of the Big Bird.

Senator COHEN. As I understand it, you would put the B-1 in terms of priority over a hardened silo MX?

Dr. PERRY. Yes. I was categorical about my views on the superhardened MX. I was a little wishy-washy about the B-1.

Senator COHEN. Thank you, Mr. Chairman.

Senator WARNER. Senator Exon?

Senator EXON. Thank you, Mr. Chairman.

Doctor, I welcome you back again. I am delighted to have you back, with your freshness and your directness and the attitude which I think all of my colleagues have always appreciated.

Dr. PERRY. Thank you, Senator.

HARDENING OF SILOS

Senator EXON. With regard to hardening of these silos, I suspect that we eventually will recommend against doing that, because we don't seem to find any support for it outside of the immediate people close to the President.

One of the things that came up in recent testimony which intrigued me somewhat was the suggestion was made that if we did indeed harden these as protection for the MX, they would certainly give some degree of protection from Soviet SLBM's.

Do you have any information to believe that the Soviets are so advanced in their technology that SLBM's would be a threat to our present silos? Are they anywhere near being accurate enough that they could be counted on?

Dr. PERRY. I cannot conceive of why the Soviets would want to target our silos with SLBM's. As I understand their present capability, and as I would project their capabilities in the next decade or so, I don't believe that would be a serious threat to our silos, hardened, superhardened or not.

Senator **Exon**. You question whether or not we should maybe even go ahead with the MX if we were not going to put it in an MPS system of some type; is that right?

Dr. **Perry**. I agonized over that and said on balance I would not go ahead with that because I don't believe we will come up with a survivable basing mode that is acceptable.

Since I am pessimistic that we will get a basing mode that is both survivable and acceptable, I am opposed to putting a weapon that lethal in an unsurvivable mode, for reasons I have described in terms of hair triggering the alert.

I would instead pour my resources into other directions described to Senator Nunn.

STEALTH TECHNOLOGY

Senator **Exon**. Moving on to the Stealth technology, in your view—I think I know what your answer is but I would like to have you state it again for the record—in your view, if we went all out with the Stealth bomber purchase, when do you think the IOC would be?

Dr. **Perry**. Senator Exon, I do not think I am the best witness on that question. My detailed information is about 8 months out of date on that question. As of that time, I would have estimated that 1989 was a reasonable possibility, but I would not have bet my life on it, or even my reputation.

Senator **Exon**. What about all these options that we are considering today? Remind me again what your attitude was on using the FB-111 as an interim to the B-1 in our talk about leapfrogging from the B-52 to Stealth technology; have you ever studied that?

Dr. **Perry**. The FB-111?

Senator **Exon**. Yes. You originally said we could fill that gap in between with the FB-111. If I remember the figure, it was somewhere between $5 and $7 billion of improvements in the FB-111?

Dr. **Perry**. I was not very enthusiastic about that. For one thing, I was very skeptical about those figures. I thought it would cost substantially more than that, and it was an opportunity cost in subtracting those airplanes from the tactical forces. I have no great enthusiasm for doing that. I don't think that they really provided an attractive solution to the problem as it was posed.

The problem, presumably, was developed because our ICBMs were vulnerable to attack and if we were going to go for non-ICBM solutions, for offsetting that, then it seemed to me we had better programs that were already underway, namely, in the cruise missile, that could be accelerated instead.

We had then and we still have the option of converting not only the B-52G's as cruise missile carriers but also the B-52Hs as well, that would take you from a 3,000 cruise missile force to a 5,000 cruise missile force. That would be a powerful response.

I also felt then and still feel now that we had the Trident II option and that option is being pursued, I think, independent of the other considerations we are having.

Senator Exon. If we were not locked into what the administration is now proposing, I suspect then that you would say that you felt that the interest of the United States overall security would best be served by proceeding as quickly as possible with the development of the MX missile in an MPS system, and go all out on the Stealth bomber; is that a fair assessment?

Dr. Perry. I haven't advocated the MX and MPS system at this hearing because I have come to my own assessment that it is politically dead. I haven't been trying to provide the artificial respiration that might be necessary to bring it back to life. I might be wrong, but my assessment is that that would be an extremely difficult task. I have instead tried to concentrate, if it is dead, on what are the alternatives open to us.

WINDOW OF VULNERABILITY

Senator Exon. If it is dead—that is the basis for a follow-up question—if it is dead, and I respect very much the attitude that you have expressed by not playing sour grapes on some decisions that I think you and others had made, let me ask this question: Have you ever heard of the phrase, "window of vulnerability?"

Dr. Perry. Yes; I have, once or twice.

Senator Exon. In your opinion, from what you know of the defense plans that were laid when you were there and from what you know of the defense plans that have since been announced with regard to our strategic capability, is it your opinion that the window of vulnerability is being closed or thrown open wider with the recent changes?

Dr. Perry. I am having a difficult time answering that question, Senator Exon, because I had defined that phrase differently than is implicitly defined in the President's definition of the problem.

To me, the window of vulnerability applied to that time period after our Minutemen became vulnerable, before a survivable ICBM was deployed. That is how I understood the phrase.

Senator Exon. I think you were wrong on that. You are not wrong very often, but I think that was not the perception of Americans in general.

Dr. Perry. I think it came to be regarded as a general deficiency of our strategic forces relative to those of the Soviet Union. I had always believed that original phrase was conceived to be related strictly to the vulnerability of the ICBM's. Relative to any assessment of that problem, I think that any assessment that our strategic forces are deficient and inferior to those of the Soviet Union must rest on comparing our ICBM forces, observing, first of all, that they have perhaps three times as many warheads in their ICBM forces as we have; but in any consideration of the bomber forces and submarine forces, ours is clearly superior by any objective evaluation.

To the extent that the window of vulnerability means our strategic forces are inferior to theirs, I think it is miscast. I simply don't agree.

Senator Exon. You think what?

Dr. Perry. I think it has been miscast. I do not agree there is a window of vulnerability as so defined. I do agree there is a period of time that our ICBM's will be vulnerable before we can do anything about it. That is why I say it depends on what the definition is. I believed then, and I believe now, that the superior strength of our bomber forces, our cruise-missile forces which will be coming on line, and our submarine forces, over the equivalent forces in the Soviet Union is a reasonable offset to the Soviet ICBM force. That is why I don't accept the statement that our forces are inferior.

Senator EXON. My time is up. I want to say you are a scholar and a gentleman. Thank you for coming.

Dr. PERRY. Thank you, Senator.

Senator WARNER. One question before I turn to Senator Quayle.

FRACTIONATION WOULD ELIMINATE THE MPS SYSTEM

You have undoubtedly studied the administration's theory that fractionation would eliminate the MPS system as a viable option.

What is your rebuttal to that theory?

Dr. PERRY. I thought that the best way of solving that problem was trying to persuade the Soviets not to do it, and to a certain extent you try to do that. Fundamentally, you try to make it unattractive for them to do it by having a response. When we talk about the response of adding more shelters or the response of going to BMD/MPS, it was with the idea that that is not something that one ought to do, but rather one ought to have the option of doing it and clearly explain to the Soviets we have the option to do it, so that they could see that fractionation was not an inviting alternative.

Now, given that it was equally clear to us and to the Soviets that the fractionation—BMD race was not attractive to either party, then it probably would be possible to codify that view in some sort of treaty. I worded that in a roundabout way because I say in my judgment it never depended strictly on having a treaty; it depended on being able to create the conditions that were not attractive to the Soviets to fractionate.

If you had those conditions, you would probably get them incorporated in a treaty.

Senator WARNER. Senator Quayle?

Senator QUAYLE. Thank you, Mr. Chairman.

I would like to echo the sentiments of the Senators. This is the first time I have had the opportunity to meet you. You are a very outstanding expert as we qualify our witnesses these days and I have certainly enjoyed your testimony.

Dr. PERRY. Thank you.

B–1B

Senator QUAYLE. You have stated that the B–1B would not be optimum for cruise missiles but would probably be the optimum in a nonnuclear conventional mode. If we didn't go ahead with the B–1B, what would our alternatives be on a conventional bomber in the nonnuclear mode you referred to?

Dr. PERRY. I had not come, myself, to a clear judgment on what the best approach to that problem would be. One clear alternative was to build a multipurpose airplane like the B–1B, which was both capable as a tactical war-fighter, and as a cruise-missile carrier; this lead you to a compromise design which is what the B–1B is. The other alternative is to build two separate airplanes, one optimized to be a truck, a big bus, which carries the cruise missiles, and the other is optimized to be a fighting airplane.

I am not sure which of those two approaches is better, but whichever one, my feeling was that the need date for the airplane was not probably until the 1990's rather than the mid-1980's. It has to do not so much with my judgment about airplane design as my feeling about this window of vulnerability question. My feeling is that the best thing we could do to strengthen our forces in the interim was pour on the coals on the cruise-missile program, that the Trident deployment, which is already underway, will maintain our forces adequately for the rest of the decade.

By that time, presuming that the ATB/Stealth bomber were available, then it would be the clear candidate for the fighting airplane, penetrating airplane, and in all probability I think you would look to an eventual replacement for the B–52 as a cruise-missile carrier, which is optimized to do that job. But the need date for an airplane just as a cruise-missile carrier is probably not until the mid-1990's.

The B–52, in my judgment, will be a perfectly adequate cruise-missile carrier at least until the mid-1990's.

Senator QUAYLE. Wouldn't you at some time have to have the Stealth bomber to fill the nonnuclear void problem after the B–52's? We would need another airplane besides Stealth?

Dr. PERRY. I think you need one other airplane which you could optimize around the cruise-missile carrier, one other airplane besides Stealth. You might be able to get some further benefit out of that airplane as a hardened command and control airplane.

You are looking at it basically as a transport-type airplane.

Senator QUAYLE. For the cruise-missile carrier?

Dr. PERRY. Yes, but that has hardened features in it; it has to be designed from the ground up. We did consider several years ago adapting a transport airplane to this purpose and that turned out to be a loser. If you design an airplane and optimized it for a cruise-missile carrier with subsidiary role of a command and control airplane, it would look like a transport airplane that had some special features like the nuclear hardening.

Senator QUAYLE. Under the present strategic proposal that the cruise-missile carriers are basically the B–52 and the B–1B, you are saying if we would not go for the B–1B—and that is a hypothetical question that I think a number of us are trying to think through—if we don't get it, where will we be going? I raise the question, what will be the follow-on tactical bomber, assuming we employ Stealth as a strategic bomber, would we go to a much lesser plane than the B–1B as a follow-on to the B–52? And is the B–1B too much, the way it is proposed, to basically serve in that nonnuclear force?

Dr. PERRY. That is pushing me a little farther than I was prepared to go in judgment a year ago when I was working the problem intensely. My estimate at that time was that the appropriate solution would be to bring the ATB or Stealth bomber on as a bomber which could serve both the strategic penetrating and the tactical bomber roles, and to go to a second airplane which was optimized around a cruise-missile carrier and possibly have command and control features, the first airplane, the Stealth bomber, coming on line about 1990, and the second airplane, which is the transport-like airplane, coming on line about the mid-1990's.

I thought that was suitable for the need date for the airplane and it has a further advantage of not bunching together the development costs so that they all fall in the same period.

Senator QUAYLE. Would Stealth then be an optimum nonnuclear bomber?

Dr. PERRY. Yes; I think so.

DIFFICULT AIR DEFENSE PROBLEMS

Getting back to the comment I made earlier to Senator Nunn, I think that in the 1990's, even in a limited war environment, we are going to have difficult air defense problems. One will be happy to have an airplane which is difficult for an air defense system to handle.

Senator QUAYLE. There have been arguments in favor of the B-1B to the effect that we need a two-bomber force, we need two contractors for competition; is that a valid argument? Would there be a concern if we didn't have a two-bomber competition as opposed to the B-1B/Stealth competition?

Dr. PERRY. Yes. I have tended to be a strong supporter of competition. In the cruise missile program we sponsored two competitive contractors right up to the production decision on the missile. One could do the same thing with the ATB or Stealth. One has the option of doing it. It is expensive. Or you could get the competition by having two different contractors building two different airplanes.

The problem with the second one is that it leads you to more difficult logistics on supply and unit cost of the airplane. You lose the advantage of a learning curve; you have the problem of two separate logistics on supplies to keep.

I think you want to have a pretty good argument beyond competition for doing that. You have to be able to convince yourself that the two different airplanes have important distinguishing features.

Senator QUAYLE. Do you think it is a factor that should be considered? There is a lot of talk in Congress and the public about cost overruns. If we go with one contractor and one bomber, which apparently we would do if we go with the Stealth, then would this so-called competition argument be raised, as it has been raised a couple of times? Your successor brought it up.

Dr. PERRY. I feel competition is very important. There are various ways of achieving it. We did it one way in the cruise missile program. That cost the Government several hundred million dollars to run two contractors in parallel. I believe today that was a good investment. It gave us a better program and ultimately—I can't ever prove this but I believe it—the total program cost turned out to be less.

We considered in the cruise missile program maintaining two contractors in the missile production base. We debated that back and forth.

Senator QUAYLE. Could you do it with Stealth?

Dr. PERRY. We could do it with Stealth if we wanted to.

Senator QUAYLE. It would be very expensive?

Dr. **Perry**. It is more expensive on an airplane than a missile, because for an airplane the development cost is a higher percentage of the total program cost than in the case of the missile.

Senator **Quayle**. Is there any good second option on MX? You have gone through this with other Senators here. Is there any good second option, in your opinion?

Dr. **Perry**. I don't know of any and I have wasted a good many years of my life studying that problem. More importantly, there have been a lot of good people that have spent a good many years looking at alternative ways of survivable basing of ICBM's. I don't believe there will be anything new under the sun.

STRATEGIC BALANCE SHIFT

Senator **Quayle**. Do you think there will be any significant shift in the strategic balance if, in fact, we discard MX, but maintain the Minutemen and Titans that we have and accelerate Trident II and the cruise missile program and make the determination dependent on how fast we get an ATB? Would there be any shift?

Dr. **Perry**. I don't think the MX as proposed adds that much to our military capability, even if you imagine it would survive. We are looking at 6,000 warheads in the Soviet ICBM force and 2,000 in ours. After deploying MX, we are looking at 6,000 and 3,000. Instead of three to one, we would be looking at a two to one disadvantage.

Senator **Quayle**. Basically, we would be emphasizing the dyad, so to speak, rather than the Triad. We would still have the land-based missile, but not in any kind of modernization mode?

Dr. **Perry**. The Minuteman is a formidable force, the Minuteman III in particular. It probably will be into the 1990's before you have to start worrying about deterioration of the rockets and you have to start replacing rockets or replacing with a new missile.

Senator **Warner**. Senator Quayle, your time is up. I think other Senators would like to have one more question.

ROAD-MOBILE MISSILES

There will be a good deal of debate on the possibility of the road-mobile system which, as I understand it, would involve the design of another missile that we don't have in inventory or on the drawing board now.

Do you think that is a viable option that we should spend much time considering?

Dr. **Perry**. I would like to differentiate between two different kinds of road-mobile missiles. One is a system where you keep it at its base and then on an alert you scramble it, much as we do with the B–52's today.

Senator **Warner**. And as done with the Pershing?

Dr. **Perry**. That system, I think, would be ineffective, because of the time it takes——

Senator **Warner**. I missed that.

Dr. **Perry**. It would be ineffective. It takes too long for the trucks to drive away and the trucks are too soft. If you take the combination of the slow speed of the trucks and the relatively softness of the trucks, no matter how hard you try to make them, you end up then with requiring several hours of alert, which means, in effect, you have no capability against a surprise attack.

So, I tend to rule out the road-mobile system which is contained at the base because it does not provide protection against a surprise attack.

On the same basis, the Pershing system and the GLCM system, TNF, do not either. We never had any illusions that they would do that.

The alternative for a road-mobile system is like continuous airborne patrol, but this would be a continuous highway patrol where you have trucks driving the missiles up and down your interstate highways continuously. Every time that proposal has come to me, I have turned it down and I would not recommend that program, because I think sooner or later you are going to have an accident with one of those trucks. That is not going to cause a nuclear explosion—I don't want to overdramatize it--but the rocket itself is a high explosive and the possibility of that rocket exploding would be very high and the probability then of splattering nuclear material over the countryside becomes very high.

So, you have a potential of a Titan-type accident on the public highways, and not just one of them but the possibility of several of them.

For that same reason, we don't fly B–52's on airborne patrol with nuclear bombs in them as a matter of routine. We simply want to avoid the possibility of that kind of accident. I think that possibility is relative, but it is not a remote possibility. I would not recommend such a system.

I will say on the other side of that, that of all of the systems we looked at, it is one of the cheapest systems you can envision. The cost per warhead is low because you are not putting a lot of money into basing.

MX BASING OPTIONS

Senator QUAYLE. The next question is a tough one and you can politely say," Mr. Chairman, I decline." I have spent a modest amount of time in the defense community, as you have. There is a fraternity of thoughtful people who are not influenced by political decisions or parties or anything else. They simply try to make decisions on defense based on fact and what is best for the country.

I put you squarely in that category, as I have come to know you for over 3 years. Nevertheless, today you have probably, more effectively than any other witness, discounted the MX basing options which have been enumerated in the President's proposal, and have straightforwardly indicated that you feel that if we go ahead with that option, with the interim hardened site and so forth, it would add very little to our overall deterrent capability.

Having stood back now in your present position in private life and examined that decision and undoubtedly talked to a number of your colleagues—and I would presume having had some access to the Townes report, the question is simply, how in good conscience could men arrive at that decision based on facts? You characterize it as being a political decision. I do not know whether you intended to indicate that it is your feeling that the decision was guided by political rather than factual considerations. Is there a segment within your fraternity of scientific advisers who can be supportive of any one of these options?

Dr. **Perry**. I think the arguments for that decision are not technical but that does not make them invalid. Calling it a political decision is not a derogatory term either. Political means accommodating diverse sets of views.

Senator **Warner**. You mean political in terms of States' interests and geographic interests?

TNF IN EUROPE

Dr. **Perry**. Let me state what I think are arguments I could adduce in favor. One of them, Senator Cohen has already hinted at, that we might believe it is important to do this so as to minimize the probability of unraveling the TNF decision in Europe. I think that is a reason which ought to be considered. How much weight you want to give to it is the issue. It is a substantial consideration.

A second argument is a perception argument. We have made much over the last few years of the vulnerability of Minuteman and do we want it to look like we are just walking away from that problem. This has to do with international political perceptions; it is not domestic political; it is geopolitical considerations.

The third argument you can give for it is that notwithstanding my gloomy assessment, maybe we will, in fact, a year or two or three from now, come up with a basing mode which has eluded everybody so far, which is both survivable and acceptable.

Those are the only three reasons I can adduce for doing the program, and I think they are substantial reasons which ought to be weighed.

Senator **Nunn**. What do you think of the fourth reason which has been given, perhaps not directly and at least in conservation, that, look, if we in effect put a hard target kill capability on land, even though it is vulnerable, it would threaten the Soviets' ICBM force to the extent that they would be more likely to come to the negotiating table and make significant reductions? In other words, it is sort of the Reagan administration argument that would go along the line that you are arguing, that you are creating the conditions under which you would probably bring about some form of codification of an agreement?

Dr. **Perry**. I would not mind that argument as a bluff, but I would hate to follow through on the bluff, for the reasons that it accents this hair trigger which I described earlier. If you threaten to do it and not have to do it and get some political benefit out of it, get some quid pro quo out of it, I think that is a pretty outside chance, but I guess you could make a case for that.

Senator **Nunn**. In other words, if it is going to work, it ought to work quickly, so that we get some codification quickly and be able to back away from the hair trigger?

Dr. **Perry**. Yes. I don't really have any great hopes that would be an effective tactic. I cannot deny the possibility of its being an effective tactic.

Senator COHEN. One thought occurs to me: In addition to possibly forcing the Soviets to the bargaining table, I suppose you could argue that the Soviets being as concerned as we are about the possibility of a nuclear attack, might be encouraged to go to a submarine-launched program. I suppose you could stretch that out one step further and say they not only would go to the bargaining table, but they also might get away from a land-based system. I suppose that could be a logical assumption.

Dr. PERRY. It seemed to me the argument for putting a hard target, substantial hard target kill capability in the MPS silos, is that you wanted to push the Soviets in the direction of a survivable system and push them to the negotiating table.

I have less enthusiasm for that logic when the missile is vulnerable.

Senator COHEN. Whatever is done on the MX and the B-1, I think you advocated that we go forward as quickly as possible to an advanced BMD program. Is that correct?

Dr. PERRY. Yes.

Senator COHEN. As I recall, during the Carter administration, in addition to the MPS system, you also left open the possibility—because of the fragmentation problem which may or may not have been solved by SALT II—of having MPS in conjunction with BMD sometime in the future?

Dr. PERRY. Yes.

Senator COHEN. I would ask you, would it not be equally possible to argue that if this administration is permitted to go forward now with BMD and if this Congress is going to insist that we leave open the option of deceptive basing mode for the MX, couldn't you, in fact, come to the very same ultimate conclusion that the Carter administration wanted, only in an inverse way? You were going to go MPS plus BMD. It may be that we go BMD plus MPS and end up in the same exact situation.

I know you are cynical about that possibility, but if there is enough incentive and impetus coming from this side of the debate, saying we don't like a static or fixed based silo for the MX, what we are saying is we are prepared to give you the BMD, accelerate it, and we are also insisting that you have MPS and not foreclose that option, don't you ultimately come out in the same place?

Dr. PERRY. No. The sequence is different. It leads you perhaps to different reactions from the Soviets. I was never in favor of deploying a BMD system. I was in favor of having the capability so that we could use that capability to persuade the Soviets not to fractionate, not to challenge, our MPS system.

To me, the BMD system is something in which you have to maintain a vigorous R. & D., you have it in your pocket, you threaten to use it. If you do that in reverse sequence, it nullifies that strategy.

I would hope that we could avoid deploying a BMD system that, it seems to me, is going to trigger a series of reactions from the Soviet Union, certainly among others, the deploying of their BMD system and acceleration of the whole BMD program.

It is not clear to me that in the chain reaction which is set off that we are any better off.

Senator COHEN. I am not sure whether you call what the Soviets are going to do BMD or air defense system. I think they are advancing a very wide scale, sophisticated air defense system, where we have very little, if any, in that regard. I am not sure that that is a legitimate concern, that if we go to BMD they are going to go too. I think they are headed there, whether you call it BMD or air defense system. They are far advanced with any system than we are undertaking. If we go to the BMD-plus option for the deceptive basing mode—not the most ideal, not something I would advocate, but one to consider when faced with the choice of canceling it or leaving open the option—don't you still have two possible consequences. They may decide this is the time to start negotiating, as you would like to see or it may force them into a deceptive basing mode other than their current SS–18 system?

Dr. PERRY. Yes.

Senator WARNER. Senator Exon, do you have one question?

Senator EXON. Yes, I have two questions, Mr. Chairman.

Senator WARNER. You are petitioning for two questions? Go ahead.

B–52 VERSUS B–1B

Senator EXON. Doctor, would you give the committee your evaluation as to the pros and cons of the B–52 versus the B–1B as a cruise-missile carrier, as an effective cruise-missile carrier? What are the strong and weak points of the two, and how much difference is there between those two bombers as far as the cruise-missile carrier efficiency up to, let us say, 1995, to choose a date?

Dr. PERRY. I think that up to 1995 either of them will be quite adequate as a cruise-missile carrier. The primary advantage that the B–1B would have over the B–52 would be a superior escape capability, the ability to escape from its base; therefore, if you were worried about an SLBM attack on the bomber bases, you would weigh that as being an important capability.

As I indicated earlier, I don't believe that is a significant worry and therefore I have tended not to weigh that very high in my judgment. I think that would be a major difference between the two.

Senator EXON. One last question: I keep getting back to the MX basing mode because the change in the basing mode of the MX missile——

Dr. PERRY. Excuse me, Senator. I should make one other point: If we are going on as late as 1995, we might imagine that the Soviets would try to reach out with an air defense and attack the carrier airplane instead of the missiles.

Senator EXON. In that case, the B–1B would be superior?

Dr. PERRY. In that case the B–52 really has only one good alternative, which is backing farther away, which means you now have the burden of making the cruise missile longer range, which we could do. Whereas, with the B–1B you would have two options: either make the cruise missile longer range or fight it out, so to speak.

Senator EXON. Or allow it to go in closer to the target?

Dr. PERRY. Yes.

Senator **Exon**. Now the chairman, I think, said something to the effect that he assumed that you had seen the Townes report. Have you seen the Townes report?

Dr. **Perry**. I have not seen the full and complete version of the Townes report, no. I think I know the essence of what is in it.

Senator **Exon**. I am trying to find out. Can you tell me?

Dr. **Perry**. As I say, not having read the report, I don't think I am really a good witness on that.

Senator **Exon**. I took it from the question that possibly the chairman had seen the Townes report. Has the chairman seen the Townes report?

Senator **Warner**. The Chair has not.

Senator **Exon**. I would hope that we keep pressing for that, because if we make these rather important decisions that we are asked to make in the next 2 weeks, if we merely close the door on the MPS system, as the good soldier has just testified he is assuming here today, I still think that is a very critical decision and affects whether we should or should not go to this whole series of weapon systems, including the B–1.

Thank you, Dr. Perry.

And thank you, Mr. Chairman.

Senator **Warner**. Thank you.

Senator Quayle?

Senator **Quayle**. I have one question: If we go ahead with the two bombers, the B–1B and the ATB, what kind of risk would we incur by sliding the IOC and FOC of the ATB, by not accelerating our efforts on the ATB?

Dr. **Perry**. I am not sure I understand the question.

Senator **Quayle**. Do we run the risk of deferring the IOC of the ATB, if we by going with two bombers, the B–1B and the ATB, rather than if we cancel the B–1B and jumping to the ATB? Would we run the risk of sliding?

Dr. **Perry**. I don't think you are running a technical risk in that. The things which cause one program to slip are independent to a certain extent of those which cause another to slip. I think we have an adequate industrial base to do both of them at once.

I think you run into one problem, and you can assess that problem much better that I, which is competition for funds. The issue is as simple as that.

Senator **Quayle**. You don't see any technological problems?

Dr. **Perry**. No.

Senator **Warner**. Thank you very much, Dr. Perry, for appearing before the subcommittee today.

[Whereupon, at 5:03 p.m., the subcommittee adjourned.]

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